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ABSTRACT

This publication contains three papers concerning the role of information systems in the field of social gerontology. The first, A Prototype Gerontological Information Program, describes research carried out at Syracuse University on the kinds of information needed by individuals in human service delivery and older persons' organizations, and evaluates the Gerontological Information Program (GRIP), an intermediary information service utilizing the best available resources in order to channel their information content to practitioners. Twenty-six references are listed. The second paper, An Exploration of Some Areas of Research on Information Needs and Networks and Their Applicability, identifies the contribution information science can make to gerontological research, focuses on the potential applications of information research to Puerto Rican aging, reviews pertinent literature, presents a conceptual model of information counseling, identifies specific research areas in information science relevant to aging Puerto Ricans, and makes recommendations for future research and policies. It cites 104 references. Human Resource Networks in Gerontological Information, the third paper, discusses concepts of information and data support to those who design environments for the elderly, influence legislation and regulations, conduct research or educational programs, or engage in policy formulation and service delivery affecting older persons. It cites 20 references. (FM)

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APRIL 1980

RESEARCH STUDY #5

GERONTOLOGICAL INFORMATION SYSTEMS AND SERVICES

Marta L. Dosa
Elizabeth A. Brindle
Gerald M. Gee

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We are deeply indebted to the people in the community organizations, service agencies and older persons' groups who have significantly contributed to our understanding of the issues discussed in these papers.

The activities discussed in these papers were in part supported by an Administration on Aging Grant 90-A-1054 under Title IV-C of the Older Americans Act, "Multidisciplinary Centers of Gerontology". The grant was awarded to the All-University Gerontology Center at Syracuse University. The opinions expressed in these papers are those of the authors.

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INTRODUCTION

Aging is the process of cumulative changes that take place during the life cycle. Thus, gerontology can be defined as the science of life-span changes. One dimension of this broad concept of gerontology is the study of demographic and sociocultural changes relating to the aging of entire societies and populations.

Social gerontology studies the behavioral and social aspects of aging in individuals as well as the sociopolitical, economic and institutional processes related to the older members of society. Information is inseparably interwoven with changes and decisions that occur in individual and societal life. It is in relation to social gerontology that the four papers in this collection explore the role of information.

The number of people in their later years is growing at a faster rate than any other age group. The phenomenon of a world population and, specifically America, growing older has been documented by demographers. The policy implications of this trend are becoming a familiar theme of the media. We have no precedent in history for the number, impact and political role of older persons. New balances in citizen participation and public policies gave new identity, voice and visibility to the old. At the same time, we are beginning to realize with horror that probably no other society was able to produce the isolation and alienation similar to what our advanced industrial age can impose on the frail and the lonely. Society treats its older members as a homogenous group, although we know that chronological age is not always relevant as a determinant of human needs. Research has opened up many new perspectives and understandings about aging, but decisions and policies are being made every day without adequate information. On the

one hand, we live in a knowledge oriented world and accumulate large masses of data, on the other we lack even the most fundamental perception of how older people "find out" about information that helps them to cope with daily life. These dichotomies have created a responsibility and a challenge for the information professions.

During the past seven years the School of Information Studies has evolved a context for teaching, community service, research and the field testing of prototype information systems in social gerontology. Beginning in 1973 a course, "Community Organizations and Information Transfer" brought students and community groups concerned with the elderly increasingly into contacts with each other. Projects included information support for an outreach program in a geriatric psychiatric center, the establishment of a county office for the aging, and services in a county penitentiary. The objective was to study the political structures and the role of information in various institutional settings. In 1974, more than 50 percent of the class was involved with projects concerning aging services in the community. Since the course was scheduled for the evening, a few staff members of service organizations started attending informally in order to participate in discussions. Students also had a heavy dose of reading drawn from the literature of gerontology, and met with students from other academic units at colloquia. The philosophy behind this direction was that field learning needed to be integrated with the conceptual basis of gerontology.

These activities soon brought the School of Information Studies and the All-University Gerontology Center into collaboration. Established in 1972, the Center fosters scholarship and service through an interdisciplinary approach to the study of the life span. The Center does not itself award

degrees. Instead, it functions as a catalyst and coordinator of gerontology-related activities across a number of academic divisions. Students matriculate for a degree in a college or school within the university, for instance the School of Information Studies, and undertake a concentration in gerontology. Opportunities for both research involvement in the School and field experience in the community are available. Upon completion of requirements, students are eligible for a Certificate in Gerontology, awarded in conjunction with their academic degree.

In 1975 a workshop, "Information Sharing in Gerontology", was co-sponsored by the All-University Gerontology Center and Information Studies to explore ways of developing and assessing information dissemination programs. Topics included research utilization; strategies for identifying data and information resources; technical and legal information; and problems of measuring the cost of information services.

During the same year, a pilot project was initiated by the School of Information Studies to build a gerontology information sharing network within the university. This effort addressed the issues of informal information flow in a multidisciplinary field. It represented the application to a social scientific community of insights that emerged from research in the 1960's on the informal communication structures of scientists and technologists.

"Information sharing" referred to the direct exchange of specialized knowledge and data resources not currently available through libraries and other formal systems. Under the coordination of Martha L. Hale, the in-house project interviewed academic gerontologists as to their teaching, research and other professional activities and their willingness to share

their expertise, data files and office collections with the rest of the academic community. As a result, the first edition of Human Resources in Gerontology at Syracuse University was issued jointly with the All-University Gerontology Center in 1976, carrying the "interest profiles" of sixty-three faculty members and doctoral students who agreed to the exchange of specialized information. The latest edition, including eighty-five individuals and produced under the direction of Stephanie Ardito, was issued in 1979.

As the School of Information Studies was expanding its relationships with service agencies, state and local government and universities outside Syracuse, the need for a more structured and comprehensive program in gerontology information became evident. By this time, reports of several field work projects bringing together service providers, advocates for the aged, students, and faculty for joint work, were requested and used by gerontology programs and services elsewhere. The time has come for a rigorous effort of conceptualization and the identification of research goals.

To bring some issue into a common frame of reference, two kinds of information processes were identified:

a) "Coping" information for the individual in private life, specifically for older persons, their families and support networks: information needed to solve everyday problems, make decisions and enhance the quality of life; personal information processes that operate in the context of individual situations and settings (age, minority life, handicaps, language barriers, illness, isolation, etc.).

b) "Work-related" information and data for the individual in the occupational environment: this type of information process may involve the use of formal or informal systems and any kind of information product, statistical and descriptive sources, graphics, oral messages, etc. Work-related information used by policy makers, practitioners, researchers or educators in gerontology is assumed to affect the lives of the elderly indirectly.

The current state of understanding how these information processes and products work in different situations and environments is very scant indeed. The papers in this collection, partially based on an analysis of the literature, document the need for raising and investigating this and similar questions. What kind of on-going information dissemination is needed by a senior center to assist their members? How can the rural elderly be reached by personal information support rather than only by technological devices? What measurements can be developed to assess the impact of information usage on service providers who work with elderly clients? And, how do we alleviate the problem we have learned to respect through our work with community organizations: how can policy makers, practitioners and advocacy groups be linked with the research process in gerontology, so that they can provide input as well as receive information about new findings?

In the face of these, and numerous other complex questions which are pressing for exploration and study, one has humbly to select a small segment and design the kind of projects that integrate service and applied research without compromising either.

The approach that most strikingly corresponded with our commitment to practitioner-researcher interaction was described by Pierre de Bie for the University of Louvain, as problem-focused research:

> Within the human sciences, between the realm of pure thought dealing with theory, where knowledge alone matters and is of intrinsic value, and that of informed action where utility and practical considerations take precedence, there is a vast area where questions of theory and utility mingle in varying proportions. In this area, the desire for knowledge is to a certain extent linked with the desire for action. (Main trends in the social and human sciences, UNESCO, 1970, p. 578).

Our interaction with service providers and advocacy groups suggested that the community was ready to collaborate in projects designed to disseminate gerontological information to agencies working with the elderly, and evaluate the impact on recipients. The assumptions leading to the formulation of objectives were: (a) information is an essential ingredient of the processes of policy making, service delivery and advocacy; (b) information systems and data bases containing the findings of gerontological research are not readily accessed by agencies and organizations serving the elderly; (c) improvement of information utilization by those who plan and provide services to and advocate on behalf of the elderly, might result in overall improvement of the quality of service; and (d) better information flow to an agency might result in better coping information offered to the elderly by that agency.

By January 1977, two community oriented projects were underway at the School of Information Studies. One emphasized research, the other information service; one explored information sharing practices, the other focused on information dissemination. The Health Information Sharing Project (HISP), sponsored by a research grant from the National Library of Medicine, developed a prototype network of health agencies and organizations. This project, currently in its fourth year operating and testing health information networks in Albany, N.Y., Binghamton, N.Y., and Syracuse, N.Y., has been described elsewhere. The Gerontological Information Program (GRIP) was sponsored by the Administration on Aging by a grant to the All-University Gerontology Center. The two models developed by the two projects supplemented each other, in that HISP assessed the implications of a decentralized information network, while GRIP operationalized and evaluated a centralized dissemination service.

Two of the papers that follow deal with the information need assessment and impact evaluation of GRIP. The other two papers, although not directly originated by the program, were certainly informed by the experience. From 1976 to 1979 the program used a three-pronged approach, integrating (1) development and testing of a prototype information system, (2) research on information needs and uses in this fast growing interdisciplinary field, and (3) teaching of a graduate course: "The Information Base of Gerontology".

Under project directors Macon (Mimi) Cummings (October 1, 1976 - August 31, 1977) and Stephanie Ardito (September 19, 1977 - September 30, 1979), GRIP developed two kinds of information services: a current awareness newsletter apprising agency personnel of new information and data sources and trends, and searches resulting in individualized "packages" of information extracted from the sources. The service provided support to community members, faculty and, whenever request, gerontological organizations or individuals outside the service area. Each information package included a summary of the content of information, citations to source documents, strategies for locating and/or ordering them, and sources for further information, if needed. Best described as a system of systems, GRIP tapped the capabilities of existing clearinghouses, information centers and libraries.

Graduate assistants and students enrolled in the "Information Base of Gerontology" participated in the searching, synthesizing and packaging of information for specific queries or GRIP newsletters. In the course of this activity, they met and interacted with community service providers and older persons' groups who used the GRIP information service. Following graduation, several of them entered fields where they are now applying

Their understanding of interdisciplinary relationships and community processes. Graduate assistants and holders of fellowships in this period included Elizabeth A. Brindle, Harriet Eisman, Nancy Franklin, Gerald M. Gee, Judith McArthur, Mary Neighbors and Mary Reinke.

Analysis of the literature pertaining to human services to the elderly has continued throughout the project. To render this literature and the results of computerized searches more accessible, a prototype in-house data base was developed. Although this data base was experimental and not available to the public, it was demonstrated to several groups, including the interagency meeting of federal clearinghouse managers at the Office of Cancer Communications, National Cancer Institute, and the President's Commission for Pension Study.

Research was an integral part of the program and its tasks were interwoven with both sys tem design and education. The need assessment study was carried out by Elizabeth A. Brindle and Gerald M. Gee, doctoral candidates in the School of Information Studies. E. A. Brindle was also responsible for the development of the data base and the evaluation research. The purpose of the evaluation was to measure the perceived effectiveness of the service; determine how the information was utilized by the client; and discover whether the user shared the information with others and how. The evaluation encompassed several processes; data collection by monitoring the system; quantitative data collection by questionnaires; and qualitative feedback through informal meetings with user groups. On-going project documentation assured the monitoring of each information transaction by a log that recorded the query, data about the requestor, mode of search, sources searched, and time spent on interacting with the user, the search, the production of the package and follow-up. The monitoring data served as the basis of cost analysis.

The pioneering graduate course, "The Information Base of Gerontology",

was offered in the Fall 1977, Spring 1978, and Spring 1979 semesters. In the first two instances the course was taught by Marta L. Dosa; in 1979 it was given jointly by GRIP project director Stephanie Ardito and M. Dosa. The weekly seminar-style sessions brought together persons from various academic and professional backgrounds. The course was designed to (a) an understanding of the philosophy and practice of gerontology and emerging information needs; (b) identify current institutional structures and policy developments in gerontology; (c) study the literature of the information uses of the elderly and personal support networks as information sources; (d) analyze student experiences in regard to the information use of service providers and other community groups; (e) provide insights into inter-disciplinary gerontological work at academic gerontology centers; and (f) review major sources of legislative, regulatory, socioeconomic and consumer information.

This collection of four papers grew out of our commitment to the exchange of ideas and experiences between gerontologists and information professionals. This exchange - the large number of letters, comments, observations on research and program descriptions we received during these recent years - have been a very rich and rewarding experience. However, this exchange could never be complete without the voice of those who have knowledge accumulated during a long life to share. Last fall, for example, I received the following letter: "Dear Colleague, I have been asked to teach next spring on a voluntary basis, a class on aging for retired members of a trade union. I am 86 years of age....I have never taken a college course in gerontology...." Thus began one of the most fascinating exchanges in the life of the Gerontological Information Program.

Marta Dosa
Syracuse, April 1980

A PROTOTYPE GERONTOLOGICAL INFORMATION PROGRAM

PART I THE NEED ASSESSMENT STUDY

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SAN FRANCISCO, CALIFORNIA, 1977

INTRODUCTION

This paper describes research carried out at Syracuse University on the kinds of information needed by individuals in human service delivery and older persons' organizations. The research has been an integral part of an information dissemination program including an educational component.

One of the social roles of the information dissemination process is to help create favorable conditions which turn knowledge into action. The literature provides evidence that there is widespread concern in both the public and private sectors with what is often called the research utilization issue, and that empirical work on the problem is underway in several fields. There is hope that eventually we will have a deeper understanding of how policy makers, managers, educators or social workers identify, locate, apply and adapt new research findings. In the past, attention focused mainly on the utilization of information by scientists and technologists. In the 1960's, much of the research concentrated on the informal social structure and support networks of the scientific community. In the 1970's, we began to observe a growing practice that attempted to semi-formalize the kinds of informal networks of experts which earlier had been studied at the theoretical level. For instance, researchers and educators from disciplines and professional schools are profiled in the second edition of Syracuse University's "Human Resources in Gerontology". Examples of both the earlier research activities and the recent spread of human resource directories or expertise indexes have been reviewed by Dosa (1978). Many of the current applications of earlier information science research take place in social problem areas.

Simultaneously, researchers concerned with information support systems

began to turn their attention to two critical areas; (a) the information needs of individuals in urban and rural settings (Warner, 1973; Gee, 1974, 1975; Dervin, 1976), and (b) the use of information by professionals providing human services (O'Brien, 1973; Holland, 1976). As Havelock said, "we can hope that within the next generation we will develop an improved resource linking capacity locally and nationally", (1976, p. 212).

In the meantime, we all are struggling day by day with the process of "finding out". Older individuals, especially the poor, face a formidable apparatus of social arrangements that are being created, modified, abolished, re-established and shaped on their behalf on the basis of incremental public policy. Service providers struggle with information overload in some areas and lack of data in others. Where does the kind of information come from that could reinforce and support their creativity at a time when well-informed service delivery is crucial in the light of economic pressures and increased responsibilities at the community level? How do they find out? What are the human problem areas where up-to-date and timely awareness of new findings is especially needed? What kind of information resources are needed by senior centers? These were some of the questions the research described in this paper approached.

The following assumptions were used as points of departure: (a) information is an essential ingredient of the process of policy formulation, decision making, programming and service delivery; (b) information systems containing the findings of specialized research are not readily accessed by policy and decision makers and service providers; (c) information support to policy making and service delivery in a community may result in overall improvement of services to elderly persons.

THE GERONTOLOGICAL INFORMATION PROGRAM (GRIP)

The research is being carried out within the Gerontological Information Program, jointly established at Syracuse University by the All-University Gerontology Center and the School of Information Studies, with the support of a three-year grant from the Administration on Aging under the Older Americans Act Title IV-C, "Multidisciplinary Centers in Gerontology". The program uses an integrative approach to gerontological information, including (a) research on information needs, (b) development of a prototype information dissemination system, and (c) an educational component designed to bring together graduate students from various disciplines and professional schools.

The program attempts to establish closer links between academic research activities and practitioners in the community who work directly with older persons. We hope to gain insights into the implications of integrating gerontological and information science concepts and approaches.

At the specific level, GRIP has been designed as a prototype program in support of service agencies and older persons' groups in Syracuse and Onondaga County, as well as of the All-University Gerontology Center at Syracuse University and its affiliates. Methods used by the program to facilitate interaction between the research, service and educational sectors include a periodic current awareness service, the development of information packages on specific topics such as housing, mental health, recreation, transportation, volunteers, etc., a feedback system and intergenerational meetings between practitioners and graduate students where community information needs are discussed.

Information Need Assessment

A questionnaire was administered to 65 administrators and service providers in community agencies and organizations that deal with the elderly in Onondaga County. Directory files including gerontological service-delivery agencies were obtained from local planning organizations and information and referral services. A representative sample of the agencies and organizations was drawn from each of four organizational types: Senior Citizens' Groups and Centers; Geriatric Centers/Nursing Homes; Specific Services; and Umbrella or Coordinating Agencies.

The following table illustrates the population of agencies, response rate and the number of respondents who were interviewed:

	Total Population of Agencies & Organizations	Sample Drawn	Agencies and Organizations Contacted	Response Rate (%)	Number of Individuals Interviewed
Senior Citizens' Groups & Centers	63	22	18	82	21
Geriatric Centers/ Nursing Homes	15	8	7	88	9
Specific Services	33	18	17	94	26
Other (Umbrella Agencies)	4	4	4	100	9
Totals	115	52	46	88%	65

Within each type of organization, there was an attempt to interview both administrators (decision-makers) and service providers (those who have high direct contact with the elderly), and to interview people from a variety of

geographic locations and a variety of different services.

The number of questionnaires was reduced to 61 because four questionnaires were incomplete. The following table illustrates the number of individual service providers and administrators by organizational type:

TYPE	SERVICE PROVIDERS	ADMINISTRATORS	TOTAL
Senior Citizens Groups and Centers	10	10	20
Geriatric Centers/ Nursing Homes	4	5	9
Specific Services	12	11	23
Other (Umbrella Agencies	3	6	9
Totals	29	32	61

The preliminary analysis of the questionnaires concentrated on those portions that were most crucial to the initial stages of the systems development.

The portions are as follows:

-Description of the respondents.
-Problems or concerns that the respondents need information about.
-Sources they have used or are using to solve their problems or concerns.
-Types of information they use and what problems they have with these types of information.
-The type of information service the respondents would prefer.

The following is a description of the respondents:

-Average age: 51 years (11 of the respondents over 70 years old)
-Education: Bachelor's Degree or more (79%)
-Training: Social work, Administration, Health
-Have worked at their job a little over 6 years
-64% of the respondents spent some of their "free time" on job-related activities
-41% of their time is spent in contact with the elderly
-59% of the respondents have taken courses about aging
-# of females: 40
-# of males: 21

The respondents were asked about the topic areas that they have problems with or questions about such as planning, funding sources, training, transportation, housing and isolation etc. Respondents in each type of organization indicated problems with acquiring new information about transportation, isolation or recreation and eligibility requirements as they pertain to the elderly. Personnel working in specific services (housing, nutrition, etc.) focused primarily on the areas that pertain to the client while people in the other three organizational categories have problems or concerns that are both managerial and service-oriented. Administrators have a significantly greater variety (average of 13) of information problems than the service providers (average of 9). People working at the umbrella agencies also have a greater variety of problems or questions than in the other three groups.

When asked which problem was the most or second most important to them, the respondents most often mentioned they were concerned about funding sources. Information about funding sources was of particular concern to administrators and to all personnel in umbrella agencies, geriatric centers/nursing homes and senior centers/groups. The topical areas of transportation, isolation or recreation, as well as planning and program development were of great concern to many of the respondents (over 60%). These topical areas also were of high concern to both administrators and service providers.

In order to understand how the respondents currently attempt to solve their problems, they were asked which information sources they use such as personal contacts, libraries, television and other media. Personal contacts were viewed by the respondents (56%) as the most helpful source. However, they also mentioned frequently current publications, particularly newsletters as being helpful. Respondents who were employed in geriatric centers/ nursing homes utilized a greater variety of sources than others. In addition, respondents listed over 200 sources ranging from nursing journals to newsletters from elected representatives. Aside from local agency newsletters, very few of the sources were indicated more than once or twice. This indicates that there is a common lack of access to materials. The respondents relied primarily on sources internal to the community.

When asked how satisfied they were with the answer they had located in their sources, sixty percent indicated that they had not found a solution to the problem or were not satisfied with the solution.

In order to understand their current information behavior and preferences, the respondents were asked about the types of information they use (directory, nontechnical, technical reports, federal government information, state government information, etc.). Directory information was selected most frequently as the type most often used. However, this was not a particularly important type for those working in geriatric centers/nursing homes. They chose state government information most frequently.

Finally, the respondents were asked about the type of information service they would prefer to have. This resulted in eighty-seven percent indicating a desire for a current awareness service with some on-demand search provisions. They (87%) preferred to have this service delivered by mail

versus telephone or personal delivery, on at least a monthly basis.

In conclusion, there are numerous problem areas that those who provide services to the elderly need information about. The topical areas vary by the type or organization and the job responsibilities within the agency or organization. For the purposes of the GRIP information system, this indicates that the current literatures and research findings of many disciplines and professions need to be searched. However, there is some indication of certain topic areas that are of particular importance for inclusion in a current awareness service on a regular basis, such as information about funding sources, transportation, and problems related to the isolation of the elderly.

It seems that the current methods of accessing information are not successful for this population as indicated by the lack of solutions to problems or dissatisfaction with the solutions. The respondents tend to rely on personal contacts and local information such as agency newsletters and newspapers because these are easily available.

THE INFORMATION DISSEMINATION SYSTEM

Design of the prototype Gerontological Information System (GRIS) began with the inception of the project and was finalized when the results of the information need assessment could be taken in account. Revisions of the system are based on feedback from users. Conceptually, the system presents a two-fold support to the gerontological community in Syracuse, N.Y.:

a. Information support is provided to the research and educational programs at Syracuse University, in order to strengthen the knowledge base of academic work in gerontology.

b. Information support is simultaneously provided to service agencies and organizations located in Syracuse and Onondaga County whose work directly affects the elderly, by identifying gerontological research findings and making them available to policy makers, practitioners, and members of senior centers and other organizations.

In addition, we recognize the fact that both the research process and its utilization by community agencies are enmeshed in social, economic and legal conditions. Policies, program development and service delivery are largely dependent on the availability of funding, legislative and regulatory measures, statistical data which can prove the need for certain programs, economic facts and the changing political role of the elderly in society. Materials for client information systems, too, need to be developed with full awareness of current public policy activities. Therefore, the Gerontological Information System is supplementing its basic responsibility to transfer research findings to the service sector by providing statistical, legislative, regulatory and program-oriented information to its users.

In order to study the operations of the prototype information dissemination system in a realistic context, the following user groups have been identified:

-All-University Gerontology Center (AUGC)
-AUGC affiliates at Syracuse University
- Other programs and individuals at Syracuse University whose work directly relates to gerontology
-Service and planning agencies in Syracuse and Onondaga County whose work directly affects the elderly
-Older person's organizations in Syracuse and Onondaga County
-Information and Referral Centers serving the elderly in Syracuse and Onondaga County.

The system has been designed to fill a broad need not currently filled by information facilities such as information and referral services, internal management information systems of agencies or gerontological and other libraries. There is a need for up-to-date topical or problem-oriented information (health, nutrition, recreation, regulations, transportation, etc.), which can be met by providing on-demand literature searches, linkages with current research, and the construction of personalized information packages for users.

Based on the information need assessment study and consultation with key members of the gerontological community, GRIS has developed two kinds of information services. A current awareness service in the form of a periodic newsletter, apprising agency personnel of new information sources and modes of obtaining them. In response to requests for specific information, data or several sources on a topic, information searches are conducted using a variety of computerized retrieval systems as well as area libraries and special collections. Whenever appropriate, users are linked with organizations, for instance, planning agencies which have unique data resources. The nature of the information need is determined by analyzing the request through personal or telephone contacts with the users. When necessary, information is extracted from the sources and organized for the user. The results of these searches are re-packaged, i.e., they are evaluated, edited, and compiled in the form, length, depth, and detail most appropriate for the requestor of the search. In addition, searches are being made and packages prepared in anticipation of requests based on topics frequently mentioned on the questionnaires.

GRIS is best described as an information system of information systems which taps the capabilities and content of existing systems according to the type of information needed. Due to the interdisciplinary nature of gerontology and the particular audience being served by this system, a large variety of information resources and services have to be utilized. The system accesses sources that cover disciplinary and professional areas of knowledge such as the health sciences, management sciences, policy sciences, law, psychology, public administration, sociology, social work, architecture and urban and regional planning. The sources are produced by local, state, and federal governments; international organizations; universities; research institutes; geriatric centers; and volunteer organizations. They are available from a variety of services such as commercial computer retrieval systems, national clearinghouses and specialized information centers.

Since document delivery and utilization is always a particularly difficult problem for the users of information services, every effort is being made to assist the user in locating the information resources. GRIS is experimenting with a variety of ways to assure document location, for instance the inclusion of source-locating strategies in the information packages and the referral of users to highly specialized sources. There are a number of feedback mechanisms built into the system. These will assist in making adjustments whenever necessary and to develop evaluation measurements. Although currently there is no charge for this service, cost analysis is an integral part of the program. Each individual transaction of information is entered in a log and unit costs for each step in the question negotiation and information delivery processes are being established.

THE EDUCATIONAL COMPONENT OF THE PROGRAM

"The Information base of Gerontology", a pioneering graduate course, is an integral part of the program. It has been designed to develop a theoretical basis for the program by identifying and synthesizing current understanding of how older persons of various backgrounds and in various settings use information, and on the kinds of information support systems people (family members, practitioners, administrators, etc) who work with the elderly need. The course provides professional education and training in a field setting where students are learning by participating in the Gerontological Information Program and by direct contact with service providers. Students also assist in the on-going evaluation of the program.

Topics of discussion and study include the relationship of the information flow to research utilization, public policy, service delivery and continuing education; characteristics of information systems in gerontology; governmental information sources; laws and regulations; census data; information and referral services; consumer information for the elderly; the information needs of special and public interest groups, and an overview of international developments.

Participants in the seminar-style course work simultaneously with university-based gerontologists and service providers, planners and policy makers in agencies. The objectives are to (a) sensitize students to the implications of information utilization in personal and professional life; and (b) to help them to understand how information and communications can improve the individual lives of the elderly and the working relationships of agencies.

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TYPES OF PROBLEMS THE RESPONDENTS WANT INFORMATION ON

	All Resp.	Senior Centers	Nursing Homes	Specific Services	Other Umbrella Agencies	Administrators	Service Providers
PLANNING OR PROGRAM DEVELOPMENT	X	X			X	X	
FUNDING SOURCES						X	
POLICY FORMULATION			X		X	X	
MANAGEMENT METHODS			X		X		
BUDGETING OR ACCOUNTING					X		
COUNSELING							
EVALUATION			X		X		
TRAINING	X			X	X	X	
RESEARCH					X		
LEGISLATION					X	X	
HOUSING	X		X	X	X	X	
HEALTH OR NUTRITION	X		X		X	X	
PERSONAL FINANCES OF CLIENTS				X	X	X	
ELIGIBILITY REQUIREMENTS	X	X	X	X	X	X	
SAFETY AND SECURITY			X		X		
TRANSPORTATION	X	X	X	X	X	X	X

Table 1A

TYPES OF PROBLEMS THE RESPONDENTS WANT INFORMATION ON

	All Resp.	Senior Centers	Nursing Homes	Specific Services	Other Umbrella Agencies	Administrators	Service Providers
ISOLATION OR RECREATION	X	X	X	X	X	X	X
EMPLOYMENT				X	X		
LEGAL MATTERS OF CLIENT		X	X				
CONSUMER PROBLEMS			X				

- 60% OR MORE OF RESPONDENTS HAVE THESE TYPES OF PROBLEMS

Table 1B

MOST IMPORTANT PROBLEMS

	All Resp.	Administrators	Service Providers	Senior Centers	Nursing Homes	Specific Services	Other Umbrella Agencies
PLANNING OR PROGRAM DEVELOPMENT	X	X	X	X	X	X	X
FUNDING SOURCES	X*	X*		X*	X*	X	X*
COMMUNICATIONS AND PUBLIC RELATIONS		X					
MANAGEMENT METHODS		X					
HEALTH OR NUTRITION			X				
TRANSPORTATION	X	X	X*	X		X	
ISOLATION OR RECREATION	X	X	X	X		X	X
COUNSELING					X		
EVALUATION					X		
TRAINING						X	

* NUMBER 1 PROBLEM

Table 2

INFORMATION SOURCES THE RESPONDENTS USE

	All Resp.	Administrators	Service Providers	Senior Centers	Nursing Homes	Specific Services	Other Umbrella Agencies
PERSONAL CONTACT	X*	X*	X*	X*	X*	X*	X*
OTHER PUBLICATIONS (AGENCY MEMOS, NEWSLETTERS, REPORTS, ETC.)	X	X	X		X	X	X
LIBRARIES					X		
RADIO							
TELEVISION							
NEWSPAPERS	X	X	X	X	X	X	X
MAGAZINES (JOURNALS)	X				X		
BOOKS					X		X

* MOST HELPFUL SOURCE

Table 3

TYPES OF INFORMATION THE RESPONDENTS USE

	All Resp.	Administrators	Service Providers	Senior Centers	Nursing Homes	Specific Services	Other Umbrella Agencies
NON-TECHNICAL, PUBLIC INFORMATION	X	X	X	X	X	X	X
DIRECTORY INFORMATION	X*	X*	X*	X*		X*	X
PROGRAMS OF OTHER ORGANIZATIONS OR AGENCIES	X	X	X	X			X*
PROGRAM PLANNING INFORMATION	X	X	X	X			
STANDARDS OR SPECIFICATIONS						X	
FEDERAL GOVERNMENT INFORMATION	X	X			X	X	
STATE GOVERNMENT INFORMATION	X	X			X*		
CONFERENCE INFORMATION	X				X		

* SELECTED MOST FREQUENTLY

Table 4

A PROTOTYPE GERONTOLOGICAL INFORMATION PROGRAM

PART II EVALUATION

Impact of Information and Data Support For Practitioners Working With The Elderly

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Research Utilization: is there anything left to say?

The dissemination and utilization of social science research has received much attention in recent years. A vast literature has burgeoned especially around policy-related knowledge and communications between researchers and policy makers. While research for managerial decision making has also been prominent, somewhat less emphasis has been given to knowledge and information support to practitioners (Gere, 1972; Human Interaction Research Institute, 1976; Munro, 1978; Weiss, 1976; Zaltman, 1977).

The broad framework of the human service literature then, includes at least the concepts of knowledge use for and by (1) policy makers, (2) management, (3) professional practitioners in different fields and several other groups. Each of these areas may be further subdivided into (a) utilization of directed research encompassing studies performed specifically for end users and goals (the problem-solving model), and (b) the on-going monitoring and tapping of generalizable research findings for users (the enlightenment model) that "provides the intellectual background of concepts, orientations and empirical generalizations" that inform the professional activities of the user (Weiss, 1977, p. 544).

Although some insights gleaned from this complex body of literature helped us to better understand why and how human service deliverers use information, one has to separate the concern with service providers from the broader issue of policy research utilization. Human service providers (including practitioners, planners, administrators) as information consumers have their own needs, style and situations that can be best studied when distinguished from the overworked conceptual area of policy research. Policy makers have less direct contact with the elderly; the pressures

upon them come from different directions and their reward systems are different from that of the practitioners.

Information need and use evaluation studies based on any typology of people in organizations, carry a built-in danger of oversimplification and thus potentially misleading assumptions. In a complex society where people's institutional affiliations, commitments, priorities and approaches are in constant flux, information user groups defy categorizations. Consequently, even practitioners who provide services for the elderly and who used a given information dissemination system represent an elusive population. To derive assumptions for their behavior from the policy-related literature would be a mistake. Therefore although this paper uses some concepts and definitions from the policy-related research utilization literature, its focus is much narrower: it deals with the reactions of a group of practitioners, including administrators and planners, to an information system that disseminated interdisciplinary gerontological information to them.

Some Definitions

Kaplan (1975) outlined the continuum of knowledge use as diffusion (the dissemination of research findings), utilization (putting the knowledge to work) and application (use of knowledge that made a difference and had an actual effect on the action). There are other useful definitions and interpretations (Havelock, 1969; Rogers, 1962; U. S. National Institute of Mental Health, 1972; Weiss, 1975; Weiss, 1976). The literature provides ample evidence that knowledge utilization is most often seen as a one-way process from the vantage point of either the researcher (knowledge production, dissemination, monitoring, evaluation) or the research user (utilization, application, implementation, feedback).

For the present paper, first we would like to distinguish between information and knowledge, the latter being defined as information fused in the human mind with intuition and experience. The literature of both information use and knowledge use is extensive. Second, we offer a synergetic view of the information dissemination activity in which the initiatives, attitudes and actions of several actors are interwoven:

Knowledge production (research)

Information production (synthesis of findings)

Dissemination of findings

Information seeking

Information acceptance

Information utilization

Conversion of information into knowledge

Knowledge utilization

Application and testing

Feedback to researcher

Evaluation of utilization

Important in this model is the concept of "information acceptance" as the basis of all further information and knowledge related actions of the user. Although conceptually it is possible for users to become aware of innovations and new information without the conscious act of acceptance, at the emotional and attitudinal levels knowledge conversion, practical use and application can hardly be successful without the practitioner's consent to the original research and acceptance of the information. A case illustrating this point was the program of "research and dissemination of policy-relevant information about aging", funded by the National Science Foundation at the University of Southern California in 1972 in which members

of the minority communities were involved in decision-making roles. "Confrontation, conflict, and compromise were major historical characteristics of this project" until community activists and academic researchers became colleagues (Bengtson and others, 1977).

A tradition in the gerontological community

The influence of individual attitudes and interactions on the process of information utilizations can hardly be overestimated. This is especially true in gerontology where research findings from many disciplines need to be integrated and synthesized for use by members of several professions. The tradition of researcher and practitioner communication winds itself through national and international meetings, symposia and projects. In 1968, for instance, the Gerontological Society's Committee on Research and Development Goals in Social Gerontology designed a set of criteria for the "administrator, planner and politician" in identifying and stimulating policy-oriented research projects (Havinghurst, 1969, p. 32). In spite of this deeply rooted tradition and major efforts at facilitating research implementation in various service professions (Riley, 1969), ten years later".... the need for translating the work and language of researchers to that of practitioners continues to exist" (Coward, 1979, p. 281). Research production and dissemination become especially crucial and require the intensive cooperation of minority researchers and practitioners in the field of minority aging research (Bell, 1976: Bengtson, 1977; Solomon, 1977).

A prototype information dissemination system

With increasing economic pressures on the resources that provide for service, advocacy, research and educational programs relevant to the elderly,

one may not expect much increase in allocations to meet growing needs. This situation calls for a determined search for ways to optimize the benefits of available resources. Information and knowledge have been recognized as important national resources (U. S. General Accounting Office, 1979). On the other hand, fragmented and chaotic information can become a major impediment to service, study and, above all, action. The practitioner, advocate or administrator who, on behalf of the elderly, should have easy access to tapping this national resource, faces a complex array of haphazardly growing, sometimes overlapping and often badly lacking information and data sources (Figure 1). Users can be overloaded by irrelevant materials and find that good sources can become obsolete before being fully utilized. It seems that only through intermediaries can knowledge be synthesized, organized and put to work.

An intermediary information service, created to utilize the best available resources in order to channel their information content to practitioners and others, the GERONTOLOGICAL INFORMATION PROGRAM (GRIP) completed its first phase at Syracuse University from October 1976 to September 1979. The prototype system, jointly developed by the All-University Gerontology Center and the School of Information Studies with funding from the Administration on Aging, provided information dissemination and support to personnel in service agencies, planning organizations and older persons' groups. The program integrated (1) design and testing of the information dissemination system, (2) research on information needs and uses and (3) individualized education and training in the utilization of information and data sources.

An information need assessment study in 1977 collected data on work-related problems service providers needed information about, types

and sources of information they used; and the kinds of information services they would prefer. The analysis identified numerous areas of concern (health issues of the elderly, transportation, isolation, etc.), practitioners and administrators wanted information on. Perceived information needs varied by type of agency and job-related responsibilities of the respondent. Results of the study indicated that research carried out in several disciplines will need to be identified and a large variety of data bases will have to be searched on behalf of the users (Brindle, Dosa and Gee, 1977).

As more and more contacts and trust relationships formed in the local community, GRIP gradually became the "first step" service and information broker for a number of agencies and practitioners who worked directly with the elderly. Practitioners and administrators who lacked the time to track down information and data through nationally available information systems and data reservoirs, depended on GRIP for relevant and individualized response. In addition to the National Clearinghouse on Aging, a large variety of federal information clearinghouses, commercial services and professional organizations served as resources. GRIP interfaced with, but did not duplicate the work of information and referral centers well known in the aging service sector. While I&R centers customarily refer the client to the human services, GRIP linked requestors with sources of problem solving data, documents or institutional and human expertise.

Results of the nearly 400 information searches (in a two-year period) were evaluated, edited and packaged according to individual requirements of the user. Assistance in the location or ordering of documents and reports was normally given. Queries were categorized according to their topic, nature, level and type of response package needed. A few examples of

of information transaction appear in Figure 2. Query analyses and information were recorded for evaluation and cost analysis purposes. Several graduate students from various departments of the university who were preparing for professional or research work in gerontology, actively participated in information delivery as part of their practicum. A better understanding of the practitioners' information needs and the human element involved in all information transactions added a new dimension to the students' education.

Conceptual background of the impact evaluation

This paper discusses only one aspect of the information service, its impact on practitioners in aging service delivery. It will be useful, however, to briefly chart the broader context in which the service operated. The objectives of GRIP were (a) design and implementation of a prototype information dissemination program and provisions for replicability through documentation, (b) bridging the gap between discovery of new knowledge and its utilization by assisting practitioners and others to identify and locate relevant research sources, and (c) gain insights into the implications of the prototype for service providers and other users of gerontological information.

The evaluation effort was developed around assumptions described in more detail in a previous paper (Brindle, Dosa and Gee, 1977): information is an essential ingredient of the process of administrative decision making and service delivery; information systems containing the findings of specialized research are not readily accessed at the community level; information support to decision making and service delivery may result in overall improvement of services for older persons. The question underlying

the effort was whether there is a need to further research, replicate or expand the local-level information brokerage model GRIP developed. Since the service was free on an experimental basis, we were also interested in costing its various components to see whether in the future cost recovery would be possible.

Goals and methodology

A literature review on the interfaces of human service evaluation and information service evaluation became an integral part of the effort. This focus was critical because of the vastness and uneven quality of evaluation literature. The maturing and growing methodological sophistication of evaluation research is evident. At the same time, standards and quality fluctuate, and critical attitudes toward haphazard evaluation processes are widespread (Goldstein, 1978; McGowan, 1976; Stirner, 1977). We were interested in the similarities and differences between evaluating human services and evaluating information services. Information is a more elusive concept than service. As its importance in organizational life is growing, clients, funding, agencies and service providers become more cognizant of the need to assess information systems. Although it is relatively easy to detect a considerable body of literature on information system design and evaluation, it is less obvious whether these insights and methodologies are applicable to information systems for human services (Arnovick, 1978; Swanson, 1975a; Swanson, 1975b). One of the difficulties in evaluating the impact of information services is to distinguish between the value of information and the value of the information service (Mason and Sassone, 1978).

The GRIP evaluation attempted to find out if the users of the information service who received customized information packages actually used the infor-

mation; what kind of job-related activity the information was used for; what types of benefits the users derived from the information, (for instance solution to a problem or practical assistance on the job); with whom was the information shared, if at all; what the perceived quality of the information was to the user; and the users' perceptions of the value of the service (Figure 3). The analysis of responses, together with the characteristics of information acquisition that emerged from the need assessment study, helped us to construct an informational profile of GRIP users. It was on this profile as well as on qualitative feedback obtained from users that our conclusions about GRIP were based.

The evaluation was aimed at three user groups: community-based users in Onondaga County, community-based users elsewhere; and academic users at both Syracuse University and elsewhere. This paper reports on the preliminary findings about the reactions of the two community-based groups of service providers to the information dissemination service. These findings should be considered as exploratory only.

During a nine-month period forty-three people who worked with the elderly in Onondaga County used the GRIP information service. Thirty-four could be reached and asked for formal feedback by means of a self-administered questionnaire. Thrity-three responded - a rate of 97%. In addition, questionnaires were sent to forty-three GRIP users located elsewhere. This group included individuals from the national and international gerontological community. Thirty-two responded, a return rate of 77%. A description of these two respondent groups is contained in Figure 4.

How did the practitioners use information?

Data and information are passive unless activated by an individual. This transformation, together with the individual's creative intuition and experience, creates the knowledge that can be applied to solving a problem, prioritizing options, making a decision or updating one's awareness of alternatives. Such utilization of information is difficult to evaluate because of the interpretations by different people of what is useful and what is not useful information.

The respondents were asked to indicate the kind of activity for which they used the information received from GRIP.

In the local group, the information was most frequently used for planning (45.5%), developing programs (34.4%) and education and training (33.3%). Practitioners located outside of Syracuse and Onondaga County reported that the information they received was most frequently used for education and training (46.9%), planning, (34.4%) and program development (28.1%). Thus planning, programming and education and training seemed to be types of activities where these practitioners and administrators put the information to work (Table 1).

Surprisingly, in the local group only 5% used the information for tasks related to service delivery. The corresponding percentage in the non-local group was 21.9% which was still not significant since there were more service providers in this second group. One might speculate that while planning, programming and education/training are discrete units of tasks and thus might warrant information gathering, the every-day responsibilities for clients are handled by the practitioners without significant formal information input from outside.

We also wanted to find out what kinds of "benefits" did the information provided by the GRIP service lead to.

30.3% of the local respondents reported that most frequently the information helped them in the discovery of an organization or service of which they had been unaware. 21.2% reported this benefit was the solution to a problem, and 18.2% indicated practical assistance on the job. Of the practitioners elsewhere, 28.1% felt that the information provided them with practical assistance on their jobs. 21.9% were led to the discovery of a new organization or service, and 18.8% felt the information helped to solve an existing problem (Table 2).

Two other potential benefits, the identification of a new problem and new contact with a colleague, received insignificant responses. It seemed that the information service providers received helped them more in the battling of practical problems than in discovering new things except services and organizations. It should be noted that information and referral centers refer people to human services rather than organizations. We may assume that a GRIP-like information service can supplement and enhance the work of I&R centers by helping users to find organizations not usually listed in I&R directories.

Information sharing behavior

It is in the area of information sharing that GRIP proved to be especially useful to the human service agencies and practitioners. The information packages prepared by GRIP for the requestors were not only used but passed on to co-workers and administrators. In both Onondaga County and elsewhere, most of the GRIP users shared the information with someone else. They usually shared with co-workers in their own agency (66.7% of the local respondents, and 53.1% of the users elsewhere). This

led us to believe that the information dissemination service stimulated internal communication in the recipient agencies.

Occasionally the information was shared with administrators (21% of users locally, 12.5% of users elsewhere) and with colleagues outside of the recipient agencies (18% locally and 15.6% elsewhere) (Table 3). This means that the number of users of information provided by GRIP reached an audience far larger than the original user group. The fact that there was little sharing of information with clients is discouraging. Maybe it could be explained by the technical level of most of the information. This question definitely merits exploration.

Quality of information and value of service

Even after intensive interaction with the user of an information service it is difficult to know if the information given is of the expected quality and quantity. GRIP users were asked to rate the information (on a scale of 1 to 7). In general, it appears that they have been satisfied with the quality of the information they have received from the service (Table 4).

A problem-ridden but essential question concerns the value the information service represents for the user. In other words, we wanted to know how did the information service generally help them in their job-related roles or why was it important to them. 78.9% of the local residents and 78.1% of the service users located elsewhere agreed that the service saved them time (Table 5). The users did not particularly think that GRIP saved them money because information is generally thought of as a free good even though actually it is not (U.S. General Accounting Office, 1979). As

to the question whether they could have gotten this information any other way, respondents thought that the information was probably available somewhere (even if not always accessible), but that it would require them to track it down, which is what the GRIP service did for them.

Do people know what information they need?

In the information need assessment study, we asked practitioners and administrators to indicate those problem areas related to aging and aging service they thought they would need information about. A comparison of these "issues" or areas of concern,as projected by the respondents with the actual information queries GRIP received from the service community, revealed a puzzling situation (Table 6). The comparisons indicated that the actual requests did not correlate with the problem areas indicated earlier. Over 60% of the respondents indicated a need for information on planning and programming, training, housing for the elderly, health and nutrition, eligibility requirements, transportation and isolation. On health and nutrition, GRIP did receive a significant number of information queries. There were absolutely no requests for information on eligibility requirements or transportation. This finding points to a need for more aggressive leadership, on part of an information service in disseminating information on the basis of need assessment whether specific requests are received or not. A service close to the pulse of the community should anticipate problems and concerns before individually voiced need. This, we think, is "information advocacy".

Conclusions

Both formal and informal methods assisted us in better understanding of how service providers and members of older persons' groups seek and use information. Although GRIP was mandated to serve the local community, we responded to requests from persons and organizations located elsewhere, and the evaluation was based on observations of both groups of users. We found that the success or failure of each individual information transaction depends on the interactive relationships between resources, intermediaries and users. We found this to be an especially crucial factor in answering special information needs such as those concerning minority elderly. The program proved valuable not only by answering some questions we had posed at its inception, but also by opening new areas and laying the foundations for further investigation. In reference to some of our original questions concerning the potential role of an information dissemination service which also taps complex resources on behalf of human service providers in aging, this is a brief summary of our conclusions:

Service providers, including practitioners and administrators do not currently have ready access to information support and the kind of query answering and research dissemination service GRIP has offered. Community users before GRIP depended mainly on informal sources, newsletters, and locally generated information.

The three-pronged approach of information service, research and education is an effective and cost beneficial mode of research dissemination, especially when students participate in the program as part of their gerontologizing experience.

The GRIP prototype provides a connecting link between information and referral services, management information systems at human service agencies and libraries by supplementing rather than duplicating their function. This catalystic role merits further exploration at a time when economic considerations mandate the intensive cooperation of various information services.

This kind of information dissemination service can make an impact if there is a gerontologically sensitive and trained staff acting as intermediary and able to (a) search national and international interdisciplinary information resources, (b) utilize computer technology in the interest of human needs, (c) individualize the packaging of information in response to queries, and (d) through community contacts, anticipate as well as formally measure needs.

The joint training of graduate students from various disciplines in the conceptual foundations of gerontology, community-oriented research methodologies, and computer search techniques at the same time when they are brought into direct contact with information users, builds good research - practitioner relations and prepares individuals for a new role in society, that of the gerontological information disseminator.

The prototype information service, thoroughly documented, could be utilized by state officers on aging, area agencies on aging, academic gerontology centers and gerontological associations by applying the GRIP methods and processes in different ways and at different levels; services to the elderly could be enhanced by greatly needed information support to service providers and older persons' organizations.

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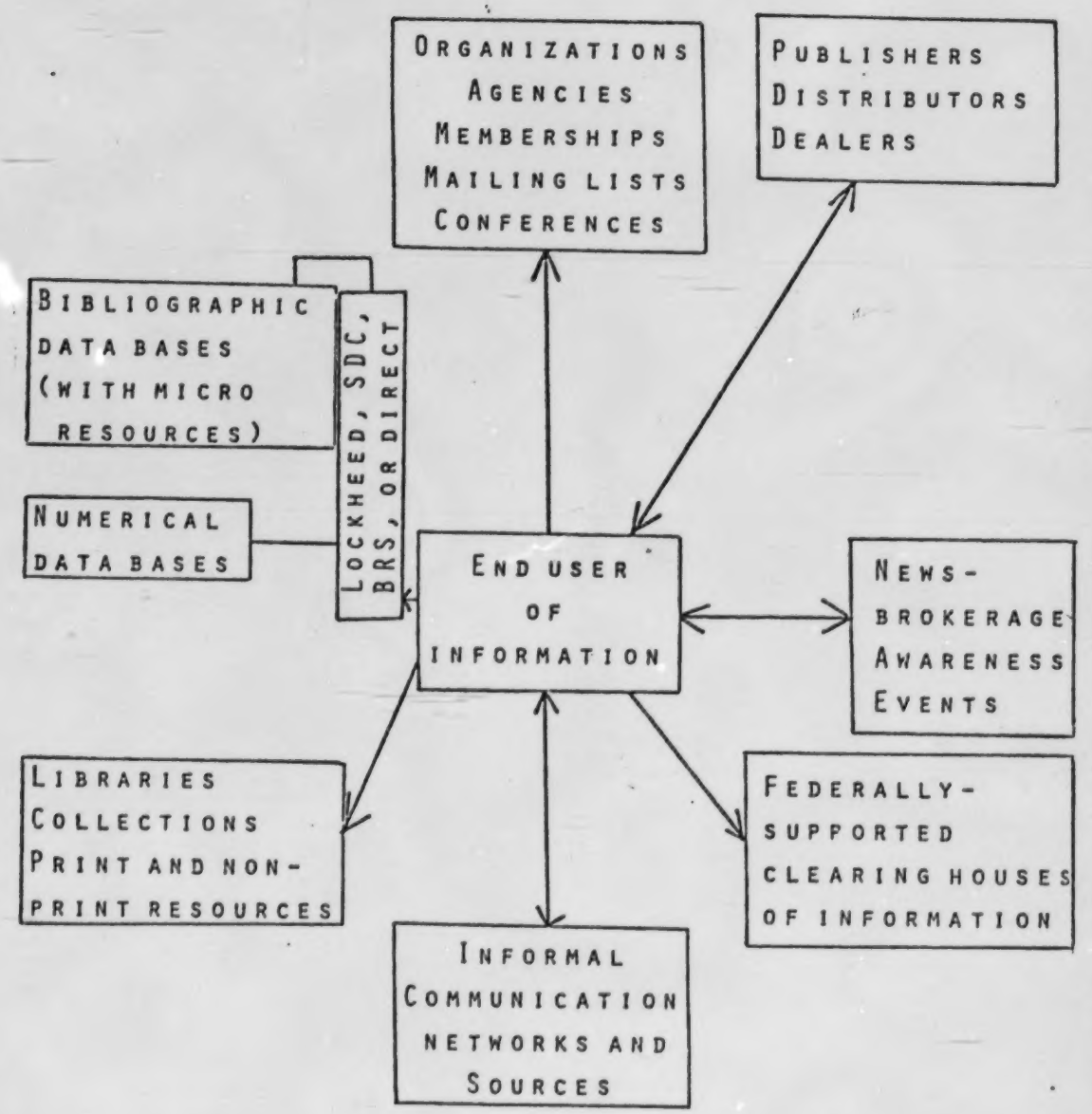

INFOGRAM

FIGURE 1

Nursing administrator, a long-term care facility	Family adjustment to institution-alization; the single spouse
Social worker, a community mental health center	Alcholism and the elderly
Newsletter editor, a area agency on aging	The older woman alcholic
Medical social worker, a military hospital	Native American elderly
Director, a rehabilitation center	Barrier-free design for elderly and disabled
Librarian, a health science library	Materials on aging with an optimistic outlook
Director of an area agency on aging	Myths and stereotypes of aging for a public presentation
Editor of a church newsletter	Technical information on large type
Director, minority educational organization	Elementary children's images of older people
Nursing administrator, a general hospital	Psychology and eating habits of elderly chemotherapy patients
Nutritionist, a nursing home	Food sources of lecithin for treating tardive dyskinesia
Nursing educational coordinator, a geriatric center	Measurements of motivation in the elderly
Nutritionist, a nursing home	Effects of institutional adjustment on the eating habits of the elderly
Social worker, a women's information center	Abused elderly women
Community advocacy organization	Primary demographic data on black elderly
A physician	Effects of aging on industrial production, absenteeism and efficiency

FIGURE 2

Objectives of GRIP

Need Assessment and Evaluation

The two studies intended to measure:

Pre-service need Assessment 1977

- Types of problems service providers needed information on
- Ways of information acquisition
- Preferred forms of information source
- Types of information
- Extent to which the information obtained was useful

Retrospective Evaluation of the service 1979

- Actual use of the information obtained from GRIP
  - . Kinds of activity the information was used for
  - . Types of benefits (assistance, solutions, contacts, etc.)
- Information Sharing behavior
- User-perceived quality of information
- User-perceived value of the information service

FIGURE 3

Description of Information Users

Type of Agency	Onondaga County		Elsewhere	
	Number of Users	Percent	Number of Users	Percent
Nursing homes and geriatric centers	9	27.3	4	12.5
Senior centers and clubs	3	9.1	0	0
Service agencies	11	33.3	7	21.9
Umbrella agencies	7	21.2	3	9.4
Other	3	9.1	18	56.3
	33		32	

Type of Position				
Administrators	11	33.3	5	15.6
Service providers	22	66.7	27	84.4
	33		32	

FIGURE 4

For What Kind of Activity Did You Use the Information You Received?

	Onondaga County Users Percent	Users Elsewhere Percent
Planning	45.5	34.4
Programming	36.4	28.1
Education, Training	33.3	46.9
Information and Referral	27.3	21.9
Policy Formulation	15.2	5.0
Service Delivery	5.0	21.9

Table 1

What Did the Information Lead To?

	Onondaga County Users Percent	Users Elsewhere Percent
Discovery of Organization or Service	30.3	21.9
Solution to an Existing Problem	21.2	18.8
Practical Assistance on the Job	18.2	21.9
Identification of a new Problem	Insignificant	
New Contact with a Colleague	Insignificant	

Table 2

With Whom Did You Share the Information?

	Onondaga County Users Percent	Users Elsewhere Percent
With Co-workers	66.7	53.1
With Administrators	21.0	12.5
With Clients	10.0	3.0
With Colleagues Outside their Agencies	18.0	15.6

Table 3

User-Perceived Quality of Information

	Onondaga County Users		Users Elsewhere	
	% With Positive Responses	% With Extreme Positive Responses	% With Positive Responses	% With Extreme Positive Responses
Helpful	66.7	41.4	68.9	31.3
Useful	72.7	41.4	62.6	28.1
Up-to-date	66.7	45.5	62.6	25.0
Relevant	69.6	24.5	50.1	18.8
Clear	69.6	30.3	53.1	28.1
Complete	48.5	18.2	37.5	12.5
Right Amount	48.5	21.2	39.1	17.2
Appropriate	48.5	30.3	43.8	10.9

Table 4

User-Perceived Value of Service

Onondaga County Users

	% With Positive Response	% With Extreme Positive Response	% With Positive Response	% With Extreme Positive Response
Saved Money	30.4	10.0	27.1	5.0
Saved Time	78.9	57.6	78.1	34.4
Only way to get Information	42.3	17.5	37.5	5.0

Table 5

Pre-GRIP Indication — Request for Information

	Problem areas indicated on need assessment respondents needed information on; percent of respondents		Onondaga County (51) % of requests	Elsewhere (42) % of request	Both (93)
1	Planning/programming	over 60%	12	5	8.6
2	Statistics/demographic information		12	2	7.5
3	Funding sources		8	0	4.3
4	Communication/P.R.		2	2	2.2
5	Policy formulation				
6	Management methods				
7	Budgeting/accounting		0	5	2.2
8	Counseling				
9	Evaluation				
10	Training	over 60%	10	7	8.6
11	Research		10	12	10.7
12	Legislation		4	0	2.2
SERVICES TO CLIENTS					
13	Housing	over 60%	6	10	7.5
14	Health/Nutrition	over 60%	25	29	26.9
15	Personal finances				
16	Eligibility requirements	over 60%			
17	Safety/Security				
18	Transportation	over 60%			
19	Isolation/Recreation	over 60%	2	0	1.1
20	Employment				
21	Legal matters		0	5	2.2
22	Consumer problems		10	24	16
23	Other				

Table 6

AN EXPLORATION OF SOME AREAS OF RESEARCH ON INFORMATION NEEDS AND NETWORKS AND THEIR APPLICABILITY

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- Planner, administrators, services providers, educators

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Introduction

In recent years, information as a significant national resource attracted the attention of policy makers, administrators and researchers. National governments and international organizations place it on their agenda. A multi-billion dollar industry is developing around its production and marketing. Information products (printed materials, data sets, machine-readable data bases) are measurable and may be studied and evaluated quantitatively as well as qualitatively. On the other hand, the human processes related to information - communication, analysis, interpretation and utiliztion - are more complex and culture-bound. Since they are prone to psychological, judgmental and environmental determinants, their application in various societal and cultural contexts presents a problem. Research on information products and technologies is more transferable crossculturally than research on information processes. However, products and technologies might prove useless without the facilitating and assimilating role of the information process. The effective introduction of information systems in a new environment is unthinkable without an understanding of their use, modes of evaluation, and impact on the new user group (Skorov, 1970; International Research Development Centre, 1976). With this as our first assumption, this paper will focus on areas of research which are concerned with the information process, particularly the role of human resource networks in information sharing and exchange. Our second assumption is that in the culturally and

psychologically sensitive research area of Puerto Rican aging, a discussion of information processes will represent a more useful effort than an exploration of information products and technologies.

This paper will attempt to:

* identify the contribution information science can make to gerontological research,
* focus on the potential applications of information research to Puerto Rican aging,
* review the literature pertinent to our topic,
* present a conceptual model of information counseling,
* identify specific research areas in information science relevant to Puerto Rican aging, and
* make recommendations for future research and policies.

Conceptual Clarification

Research in information networks has been carried out in many social science disciplines as well as by interdisciplinary teams. The confusion of unsettled terminology often overshadows the role of information as a social force. Our first concern is to clarify the concepts which guide discussions in this paper and are central to the model we will present.

Data - numerical or bibliographic expression or description of basic facts.

Information - data (facts) people receive from the outside world and which contribute toward their knowledge.

Knowledge - information fused in an individual's mind with past experience and creative intuition, generating new understanding.

Information need - unexpressed desire for information; expressed demand for information; unperceived lack of information. (Desire and demand for information are to some extent measurable; unperceived lack of information is difficult to infer, and its prediction by the information scientist often borders on the temptation to "tell people what they need to know".)

Coping information - information needed to manage one's life successfully, to cope with everyday problems and to realize opportunities; also called "life information" (Bates, 1974) and "information for everyday survival" (Gotsick, 1977).

Gerontological data and information - we may distinguish two broad categories: Information for the individual in private life (coping information for the elderly, the family member, the comsumer, etc.);

Data and information for the individual in the work environment (policy maker, practitioner, administrator, researcher).

Support networks of the individual - supportive groups of people on whom an individual depends for morale, practical help, coping information, communications, etc.

Human resource networks - informal groups of people (in same locale or elsewhere) on whom an individual depends for sharing or exchange of data, information, ideas, etc. Most often these networks develop around the individual in the work environment. Their role is especially significant in interdisciplinary areas where resources are scattered and formal information systems are less effective.

Information counseling - the interactive process by which an information practitioner (a) asessess the information needs of an individual or organization, (b) determines the optimal ways to fill such needs and assists the client in information use, (c) assures systematic follow-up and feedback in order to evaluate the effectiveness of counseling. Information counselors can optimize their effectiveness by accessing, on behalf of their client, not only formal information systems but also support networks and human resource networks.

Objectives of the Literature Review

In the early 1970's, information science, originally preoccupied with recorded information and data, was increasingly taking into account research produced by other social science disciplines. This interest was twofold. First, researchers felt the need for a crossdisciplinary synthesis of knowledge relevant to the conceptualization of information in order to identify areas where they can make a unique contribution. (In the context of research applicable to human services, Weiner (1978) provided an excellent example of such synthesis). Second, information managers and practitioners were concerned with the potential application of this knowledge to their pragmatic problems. At the same time, behavioral scientists became aware of the research done in information science, and some interdisciplinary teams began to form. It was noted a decade ago that "this mutual education and accomodation will undoubtedly continue. Information science and behavioral science need each other" (Paisley, 1968).

The following review of the literature covers those areas which have implication for research on Puerto Rican aging and information needs, and can serve as resources or provide conceptual models. Also included are references to descriptive publications where suggestions for future research were offered. The review, far from being comprehensive, focuses on sources published in the United States, because these are accessible to interested gerontologists. Insights derived from these four areas of the literature will help to understand the kinds of individualized information services that would assist Puerto Rican persons concerned with problems of aging either in their personal or professional capacities.

1) Sources on Puerto Rican aging provide cultural sensitivity and socioeconomic intellegence for formulating policies, designing systems and training information professionals who can relate to Puerto Rican needs. Here, we also identified some sources which contained recommendations for future research.

2) Research on human resource networks and personal support networks is relevant to personalized information delivery for service providers and for the elder Puerto Rican individual.

3) Research on information for the individual in private life, carried out by Dervin and her associates at the University of Wash[illegible]ton, serves as the basis for understanding the needs and information seeking habits of people, especially those in an economically and socially deprived situation. This research has implications for policies relevant to Puerto Rican information services.

4) Research on information support for the individual in the work environment, specifically for the professional in human services, has been conducted by the Gerontological Information Program at Syracuse University under joint sponsorship by the All-University Gerontology Center and the School of Information Studies with assistance from the Administration on Aging.

Literature Review

1. Sources on Puerto Rican Aging

The following sources might build an understanding of the cultural, social and economic factors that influence the kinds of information elderly Puerto Ricans are likely to need. Studies on ethnicity have considerable value in forming a philosophical orientation and sensitivity (Kalish and Reynolds, 1976) or offering methodological hints (Scott and Gaitz, 1975).

A few broadly based works on minority aging (Cohen, 1971; Stanford, 1974) can provide perspectives and point to further research needs. Papers contributed to the White House Conference on Handicapped Individuals by Wakabayaski et al.,(on "Unique problems of handicapped minorities") and by Davis and Onyemelukwe (on "Unique problems of the handicapped aging") contain valuable resource information (The White House Conference on Handicapped Individuals, 1977). Sources might be culled also from the comprehensive annotated bibliography, Immigration and ethnicity (Buenker and Burckel, 1977). Our review pertains to Puerto Ricans in the continental United States. A review covering Puerto Rican aging on the island should be undertaken separately in order to do justice to the diversity of issues and concerns.

A. Descriptive Background Information

During the past few decades, an upsurge of academic interest in Puerto Rican studies resulted in the publication of literary texts and monographs on political, social and economic problems. Many of these studies cover the recent history of Puerto Ricans in both island and continental settings. Textual sources are scattered throughout the literatures of several disciplines and interdisciplinary fields. They are referenced by bibliographic compilations, source guides and compendia under general classes such as "Spanish-speaking Latin America and the Caribbean", "Caribbean Basin" and "The United States and Outlying Areas." Sources on Puerto Ricans on the mainland are variously indexed under "Hispanics", "Latinos", "Spanish speaking Americans", or Minorities". Bibliographic guides pertaining to Black aging should not be overlooked as possible sources.

A small part of these references has been compiled for the first time

in The Puerto Ricans - an annotated bibliography (Vivo, 1973) at the Puerto Rican Research and Resources Center, Universidad Boricua. In harmony with its intent to "offer light to Puerto Ricans in search of their own roots and their cultural heritage", the guide has significant value for historical and cultural research. The recent "Spanish-speaking elderly, a bibliography" (Delgado and Finley, 1978) includes only a few entries on Puerto Rican aging, mainly referring to unpublished conference papers. The compilers observed that sources were "diverse, scattered, frequently unpublished, terribly recent, and increasing rapidly". Further hard-to-trace sources are included in a bibliography of reports, critical studies and unpublished material (Cordasco, Buccioni and Castelanos, 1972) and in "Doctoral research on Puerto Rico and Puerto Ricans" (Dossick, n.d.) covering 1898-1966.

Since the information needs of people flow directly from their daily lives and activities, the newspaper and the grass-roots periodical are good sources for the informal identification of concerns of special groups. The Encyclopedic directory of ethnic newspapers and periodicals in the United States provides some guidance to these media. The ever-changing, colorful language of neighborhoods is another aspect in which information scientists are interested in order to better understand the kinds of language barriers people from bicultural backgrounds have when they try to ask questions. Examples of "Span-English", said to be used by the Spanish speaking in New York (craca-cracker, chipe-cheap, blanco-blank form), are included in a recent New York State publication (New York State, Office of Drug Abuse, 1976).

B. The Role of Conferences

In the 1970's, advocates, service deliverers and researchers from the Hispanic communities in the United States took a leading role in identifying problems in service delivery to the elderly and research needs. Conferences and workshops jointly organized by Hispanic organizations and professional, governmental and academic bodies presented the forum for these strategic discussions. The following is only a fragmentary record of some that included Puerto Rican problems:

1971 - At the White House Conference on Aging, a Special Concerns Session brought together about 100 delegates, most of them either Mexican-American, Cuban or Puerto Rican. Priorities, recommendations and a roster of the planning committee were published (White House Conference on Aging, 1971). Several academic gerontology centers held conferences on minority aging in preparation or in the wake of the White House Conference.

1974 - The first Institute on Minority Aging marked the beginning of an annual series. Statements on research needs were made, most importantly at the fourth Institute (Lacayo, 1977a). The paper charged that "to date, research regarding the Hispanic community is seriously defective both statistically and in its sociological interpretation", and recommended recruitment of qualified Hispano students to gerontological research, the development of programs to culturally sensitize non-Hispanic researchers, and the involvement of the Hispanic community in research planning and implementation.

1975 - The National Conference on the Spanish-Speaking Elderly, sponsored by the National Chicano Planning Council, included a brief overview paper on the specific concerns of the Puerto Rican elderly (Lacca, 1975).

1975 - Regional conferences were convened in Los Angeles and San Antonio as part of a nationwide series conducted during 1974-76 by the National Coalition of Hispanic Mental Health and Human Services Organizations (COSSMHO). The report on the Los Angeles and San Antonio sessions included a paper on the acculturation of Puerto Ricans (Cohen, 1977).

1976 - At the First Western Regional Hispanic Conference on Aging, a paper on the "cultural, psychological and demographic profile of the Hispanic elderly" gave a description of Puerto Rican community structure (Asociación Nacional Pro Personas Mayores, 1976).

1977 - Conference organized by the Research Utilization Project/ The Generation Connection of the State of Texas was representative of the increasing research orientation of the Hispanic communities. Estrada (1977) and Torres-Gil (1977) reported on survey research; Cruz (1977) described a prototype advocacy program with the elderly in East Harlem and provided background for the identification of research needs, and Lacayo (1977b) again spoke of the value of culturally determined research.

1977 - The Center of Aging, San Diego, California chose "Minority Aging and the Legislative Process" as the theme for its Institute.

1978 - "Curriculum in Minority Aging" was discussed at the Institute of Gerontology, The University of Michigan.

These and similar conferences, symposia, and workshops raised nationwide awareness of the need for training and curriculum development for Hispanic aging studies. Plans include a conference on "Curriculm in Minority Aging", with a workshop on Hispanic aging to be held in New York City in March 1979 at the Graduate School and University Center of the City University of New York. The Association of Gerontology in Higher Education (AGHE) at its 1979 annual meeting will feature a session on "Curriculum Guidelines in Minority Aging: Process and Content" conducted by the National Center on Black Aged. The guidelines will be available from the NCBA during the summer of 1979 and will include a section on "Hispanic Aging" by José Cuellar.

C. Specialized Research Studies

Most of the earlier surveys were carried out by federal and state agencies. The involvement of Hispanic researchers is a very recent trend. The following are illustrative of subject matter and origin of survey reports.

Federal agencies conducted the study of housing conditions of Cubans, Puerto Ricans and Mexicans in Dade County, Florida (U.S. Dept. of Housing and Urban Development, 1974), as well as the secondary analysis of census data that resulted in "A Socio-economic profile of Puerto Rican New Yorkers"

(U.S. Dept. of Labor 1975). A study on occupational trends of Blacks and Puerto Ricans in New York State was based on comparison of 1960 and 1970 census data (New York State, Dept. of Labor, 1975).

Although researchers familiar with the Hispanic problem domain are keenly aware of the inadequacy of census data and use them with caution, they have fewer demographic sources to turn to than have Black researchers (U.S. Department of Labor, Bureau of Labor Statistics, 1975). Census records were used for secondary analysis by Estrada (1977) for a demographic survey of the Spanish-origin elderly. Some categories of the baseline data provided by Estrada are broken down to Puerto Ricans. Torres-Gil (1977) derived his data on the utilization of health facilities by the Spanish-speaking elderly (mainly Mexican) from surveys taken in Colorado, San Antonio and East/Northeast Los Angeles. The main significance of studies conducted by Hispanic researchers lies in the sensitivity with which they interpret findings and open up new research areas. They represent a research trend that arose in response to the plight of the disadvantaged in society.

D. Data Sources

The sentiment that policy makers could not be approached without evidence of demonstrated need and that the data to support evidence were either lacking or unreliable, gave rise to a growing frustration in all Hispanic groups. Leaders have learned the politics of survival and knew that they needed hard information for congressional hearings, lobbying, policy bargaining and federally funded programs where allocations were based on the size of local populations. However, resources of the Puerto Rican organizations have been limited and original data collection is hardly feasible. In 1976, the Civil Rights Commission reported that "one

obstacle to the effective implementation of governmental action to aid Puerto Ricans is a lack of reliable, continuous socioeconomic data" (U.S. Commission on Civil Rights, 1976). The 1970 census also presented a serious problem of undercount (U.S. Commission on Civil Rights, 1974).

The complexity of using census data in relation to aging was well documented by Kindig and Warren (1976). The Census Bureau's definition of "Puerto Ricans" compounds the problem. Criteria for inclusion in this category have often changed over the years and are still not standardized in the various sources. The Directory of data sources on racial and ethnic minorities (U.S. Dept. of Labor, Bureau of Labor Statistics, 1975) describes the major census and other series, and, in each case, it indicates the identifier determining inclusion in the Puerto Rican category. For example:

"Birth or parentage" - used in 1950 and 1960 censuses: still used in some of the PC (2) Subject Reports.

"Spanish origin" - first used in 1970 census; based on self-identification according to responses to questions asked of a 5 percent sample of households; used also in Current population surveys (monthly), but not consistently.

"Spanish surname" - used in 1950, 1960, 1970 censuses to classify, separately, persons in the Southwest.

"Spanish language" - first used in 1970 census; Population census, Volume I: a few reports in Volume II and many of the Housing census publications.

"Spanish heritage" - a summary concept making use of the language, surname and birth/parentage identifiers: Population census, Volume I; Housing census, Volume I and II; PHC (1) Census tract reports.

This Bureau of Labor Statistics Directory includes a "Locator Guide" for national level data in the 1970 census and detailed descriptions

of census and other statistical publications that give minority data. Because small area statistics are crucial to social science researchers who want to study elderly population clustering in predominantly Puerto Rican urban neighborhoods (Boston, Chicago, Cleveland, Hartford, Newark, New York, Philadelphia, etc.), the Directory of federal statistics for local areas (U.S. Bureau of the Census, 1976) should be mentioned here as a potentially useful source.

The basic problems we identified in the literature in relation to social data sources include (a) undercount of minorities in the 1970 census, (b) inadequate or misleading definitions of categories and identifiers in the major federal statistical surveys, (c) existing data being irrelevant to policy-oriented research, (d) conceptual, and methodological difficulties in using data for secondary analysis, and (e) geographic coverage of Hispanic population ("Southwest", "South") without breakdown to subgroups.

E. What Lies Ahead

There are signs which indicate some optimism about the future of Puerto Rican aging research on the mainland. The Minority Aging Policy Study of the Federal Council on the Aging produced two background reports, including "The knowledge base for planning services to minority elderly". This report, when disseminated, will represent a significant resource for minority-related research in the future. In addition, the Council's Study generated a specialized paper on the Latino Elderly which will hopefully become a part of the Study's report.

The Asociación Nacional Pro Personas Mayores is in the process of compiling research data for need assessment and cultural studies for dissemination to State Offices on Aging and Area Agencies on Aging (Lacayo,

1977b). At the University of Michigan, under sponsorship of the Administration on Aging, the Institute of Gerontology and the Institute for Social Research established the national archive for machine-readable social science data files in the field of aging. Special needs of state and local governments for federally produced statistical data can now be filled by Data Use and Access Laboratories (DUALabs). The for-fee Statistical Data Reference Service is available through the National Technical Information Service (NTIS).

In view of the approaching 1980 census, Congress is considering the Census Bureau's plan for the content and procedures of the next count. Controversial issues include categories of race and ethnicity and ways to avoid undercount of minority groups. It is an encouraging sign that an Advisory Committee on the Spanish Origin Population for the 1980 Census was formed and invited to send representatives to Congressional hearings (U.S. Congress. House, 1977).

Theoretical and developmental work on social indicators is underway. A project at the Institute for Interdisciplinary Studies in Minneapolis defined age-relevant social indicators as "measures for reporting the status of elderly persons with respect to various aspects of problem-solving ability" (Institute for Interdisciplinary Studies, 1974). Krieger (1971) developed a model for "social indicators and the life cycle," suggesting measurements for the population in each stage of human development. Measurements cut across human service program categories such as education, housing, transportation. Andrews and Withey (1974) used a different approach to social indicators based on variables that reflect the perceived well-being of people rather than on demographic data alone. This project is one

of the examples that chart a strong trend toward developing "quality of life indicators". Bunge (1975) offers a conceptual discussion of the difference between social indicators and quality of life indicators. We feel that the insights and methodologies of these holistic approaches have applicability to gerontological indicators.

With the increasing technological availability of searching computerized statistical data bases, researchers will be able to access baseline data with more efficiency. Research proposals in Puerto Rican aging should include a budget item for this purpose, and policy-oriented advocacy organizations should consider pooling resources to assure the acquisition of necessary data for need assessment and the justification of programs. Luedke, Kovacs and Fried (1977) listed as current trends in data searching the improved access to computer files, cheaper online storage costs, the use of mini-computers and the emergence of data compilations in multi-disciplinary societal problem areas.

In view of these trends, one cannot emphasize enough the overriding need for a planning approach to Puerto Rican aging research. Not only Puerto Rican social science researchers are directly needed, but also information intermediaries who would link researchers with the maze of data resources and would disseminate research to policy makers.

2. Research on Human Resource Networks

There are many interpretations of a network from the sociological, managerial and technological points of view. Our purpose is to delineate the network-related literature that has implications for our concern with two researchable problems: (a) personalized information counseling for older Puerto Ricans with the use of support networks as carriers of information, and (b) modes of information and data exchange among gerontologists

in academic and community settings. Literature covering managerial and technological applications of the network concept falls outside of the scope of this review. Examples of sources in the following areas will be included:

- Support networks of the individual
- Linkages among human service agencies
- Informal communication patterns of scientists and technologists
- Expertise pools and referral.

A. Support Networks of the Individual

We will define such social networks as supportive groups of people on whom an individual depends for morale, assistance, coping information and social contacts. The importance of the personal network in the life of the older person increases with the complexity of the human environment and the communication barriers (language, health problems, poverty, isolation, pride, etc.) handicapping the individual. The death of an old couple in their home with electricity turned off because of unpaid bills, is a tragic demonstration of the lack of a supportive network.

Many disciplines including anthropology, sociology, and psychology and interdisciplinary research in social gerontology and communication science conceptualized the social network. Studies on the communication function of personal networks inevitably raise further research questions for the information scientist. What kind of information is passing through the network? Oyer (1976), reviewing kin-family research, asked: "what kinds of information are communicated within the family" and gave a brief list of possible categories (food, clothing and shelter; attitudes and morale; uses of leisure time; health). Some of these catagories are very similar to what information scientists call kinds of "coping information". Hare (1966)

suggested two broad domains of information exchanged in families: "task behavior" and "social emotional". The first of these, information needed to carry out a task, resembled "coping information". What is missing from most of these family communication models are variables that would indicate whether such coping or problem-solving information is actually used by older persons and whether it helped them is specific ways.

Sources describing theories, methodologies and policy applications of research in social networks are useful because they facilitate inter-disciplinary understanding, and bring the research framework into the reach of the policy-maker. Sussman (1971) provided a state-of-the-art paper on family systems, kin networks, and implications for policy. Taxonomies and sociological classifications used for family studies were offered by the Family Studies Center of the University of Minnesota (Mattessich, 1977). The use of social networks in mental health intervention was described by Curtis (1976). In its development of a definition, rethinking and a new curriculum for the human service profession, the College for Human Services in New York City identified empowerment, "the ability of people to manage their lives, to recognize and meet their needs, and to fulfill their potential as creative, responsible and productive members of society to the extent compatible with the empowerment of others" as the ultimate goal of human service delivery. In her report on the process and evaluation of empowerment, A.C. Cohen (1978) described the citizen's role in identifying resources, gathering information and integrating services for his/her personal needs.

The literature of deinstitutionalization in the mid-1970's included several publications about the role of informal networks in helping individuals to cope after release from an institution (Demone, 1975; U.S. Dept of Health,

Education and Welfare, Project SHARE, 1978). A comprehensive report on home health care for the elderly by the U.S. General Accounting Office suggested that HEW should have intermediaries to keep physicians and institutions abreast of what is available in alternative services (U.S. Comptroller General, 1977).

B. Linkages Among Human Services Agencies

Sarasan (1976) organized the literature around theoretical concepts and provided a model by the "Essex network", maintained by a group of individuals in order to share resources and information. Benson (1973) developed evalutation data on the factors affecting networking; the impact of networking on services was tested by "knowledge adquacy scores" and "consensus scores". A theoretical model to investigate interorganizational links, including information flows, was presented by Ven (1976). He suggested several hypotheses for the study of agency interdependence and identified the categories of data to be collected. The theoretical literature on the diffusion of innovations in the human service field was organized and critically evaluated by the Real Estate Research Corporation (1976).

Applied research on the role of interagency linkages is a relatively new trend, and the quality of the output is understandably uneven. As one researcher, having evaluated the linkage processes of forty five services integration projects, stated, "findings are suggestive but hardly conclusive" (John, 1977). The terminology is still unsettled, but in recent years, considerable effort was directed at the conceptualization of theories and the standardization of definitions (Bowers and Bowers, 1977: Weiner, 1978).

C. Informal Communication Patterns of Scientists and Technologists

In the 1960s and early 1970s, social science research found that interpersonal networks, especially in fast growing and highly specialized

fields, were the preferred mode of communication and information seeking of scientists. Examples of the research included the American Psychological Association's Project on Scientific Information Exchange in Psychology, work at the Johns Hopkins Center for Research in Scientific Communication and Project INFROSS (Investigation into the Information Requirements of the Social Sciences) at the University of Bath.

Two communication phenomena, widely discussed in the literature, are especially relevant to the concepts of information sharing networks and personalized information giving. These are the "invisible college" and the "information gatekeeper".

Invisible colleges have been described as clusters of specialists in scientific disciplines who observed a certain hierarchy, exchanged early information about their research and tended to cite each others publications (Price, 1963; Crane, 1972). Zaltman (1974) noted that, in addition, invisible colleges functioned as a mechanism to indicate allocations and resources. Ths research trend generated a literature rich in controversy. For instance, it was challenged by Collins (1974) on both philosophical and methodological grounds. He questioned the validity of comparing social groups whose members share a paradigm ("a conceptual map") to social groups that had been "constructed around relations based upon their own perceptions of information flow". In his view, "to ask respondents directly for the sources of their tacit knowledge, is to confuse concept information with information exchange" (p.163).

Information gatekeepers were defined as natural communicators who played a leadership role in the internal communication cliques of R & D organizations. They also had links with outside sources and channeled specialized information to their colleaques in the organization (Allen, 1971;

Allen, 1977). Chakrabarti and O'Keefee (1977) identified five roles for key communicators in research and development laboratories: project manager, gatekeeper, entrepreneur, creative scientist and sponsor. Recently, we have observed a growing interest on part of applied social science researchers in the relationship of information processes and organizational effectiveness. Olson (1978), in his work with the R & D divisions of companies, found that where the organizational climate was not conducive to information sharing, the informal information channels were underutilized.

D. Expertise Pools and Referral

In the mid-1970s, we began to observe the emergence of expertise registries, human resource directories and other mechanisms for information exchange. These were projects of information practitioners, often without any connection to the research on informal networks. They presented an interesting paradox by attempting to impose some structure upon the use of individual expertise that, in the past, had been accessed only through informal communication.

In England, the significance and the proliferation of such directories and expertise indexes was recognized by the government's Office for Scientific and Technical Information when it funded a survey by the British Library: Indexes to expertise: An examination of practical systems (Barry, 1976). The Canada Institute for Scientific and Technical Information (CISTI) produced its Knowledge Source Index, profiling the subject coverage of specialists to whom complex information queries could be referred. The Canadian Network on STI Services will be a decentralized system based on existing resources and a referral mechanism (Jones, 1975).

Hoey (1971), reporting on his experience with developing a technical information referral service in an industrial company, identified the

following problems: (a) the assumption that experts continuously update their knowledge and are willing to share it, (b) the resistance of existing information communication networks to a new structured pattern of information sharing, (c) lack of tested models, and (d) lack of measurements of cost.

Although the literature of human resource directories is descriptive and provides no conceptual continuity with earlier research in informal information networks, it serves as a source of researchable questions. One has very little understanding of how semi-formalized networks of people, based on such resource directories, function. Can measurements be developed to assess their effectiveness? Will they facilitate exchange among the participants? Questions like these prompted the design of two research projects at the School of Information Studies, Syracuse University. The Gerontological Information Program (GRIP) is developing and testing a prototype centralized and formal information service, while the Health Information Sharing Project (HISP) is developing and evaluating a prototype decentralized and informal mechanism.

3. Information for the Individual in Private Life

For the past ten years, research on the information needs of the general public has focused on the urban population and concentrated on determining a "university of needs" and the topical problems assumed to be important to individuals (Dervin, 1976; Westat, 1972; Gee 1974). This information is necessary for system design, especially for building resources to provide services to the general public. However, this approach has led to misconceptions on the part of information practitioners. They have stereotyped users and focused their attention on treating the individual client as a stereotype determined by demographic descriptions. Information need assessment studies were of no particular help either, because the multitude of demographic

characteristics they attributed to each client resulted in conflicting descriptions of how that person should be served. It is impossible to apply normative data to individual situations. Moreover, information practitioners concentrated only on needs expressed by the client, without attempting to reach deeper into his unexpressed problems.

Dervin (1976) has initiated a new look at information needs and the relationship between the client and the information pratitioner. Her research is based on the premise that the information practitioner must realize that the client is unique and is involved in a unique situation at a particular point in time ("client-in-situation"). She undertook to find out how people deal with these situations. This meant to "make a start by opening doors to the kinds of awarenesses that are needed for the individual... and the role of information in that process. The purpose is to begin to develop understandings of the kinds of questions that need to be asked of individual clients in flexible systems..." (pg. 25).

Set in a community environment in Seattle, Washington, Dervin's research was conducted in three phases: citizen study, information practitioner study and development and testing of training packages for information practitioners. The sample for the citizen study consisted of three subsamples of adult urban residents of Seattle. One subsample (300 respondents) was drawn from the general population of all residents. The second (151 respondents) was drawn from census tracts with predominantly black residents, while the third (151 respondents) was drawn from census tracts with predominantly Asian residents. An open-ended structured questionnaire was used for the interviews. In the second phase, data were collected by self-administered questionnaires from two samples of information practitioners: 126 public librarians and 141 practitioners in service delivery.

As a result of the citizen study, it was found that people do indeed try actively to make sense out of their situations by informing themselves. However, they do not often use formal sources because they feel that they do better by using informal ways of finding out. Dervin developed a typology of states of movement that a person could be in when seeking information: (a) decision (choice between two or more options for movement), (b) worry (when a person is not in control of the situation and believes that there is no place to move), (c) problematic (even though a person is moving in some direction, he feels the choice is out of his hand and has accepted his lack of control), and (d) comprehension (the person is detoured from movement to seek information and learns something or gains a new understanding before moving on).

The information practitioner has assumed that he is always serving a client who is in the decision state. This is not necessarily true. The information needs of people change as they move through time and space. The information practitioner should be trained (a) to realize that people need different types of information when they are in different states, and (b) how to recognize the various states. Phase I of the Dervin study provides a description of the states the clients are assumed to go through to inform themselves and to deal with their situations.

The sample of the citizen study included three subgroups - general population, Blacks and Asians. The only demographic comparisons made in this study were along racial/ethnic lines to see if different life experiences resulted in different styles of coping with life. In general, it was found that differences within the subgroups were as great as between subgroups (Dervin, 1976). This would suggest that the development of different strategies for dealing with the information needs of different populations

is not necessary.

In the second phase of her research, Dervin explored the behavior of the information practitioners relevant to their reaction to the client-in-situation approach. A sample of human service deliverers and a sample of public librarians were included, both having been considered information practitioners. She has found that the information practitioners had difficulty dealing with the client as a unique person involved in a unique situation. Dervin, et al. (1977a), concluded that the practitioners (1) were best able to deal with only those aspects of client-in-situation which are now the focus of the normative system; (2) were best able to treat situations normatively rather than uniquely; (3) overemphasized information; (4) deemphasized personal sense-making; (5) treated the articulation process as a system translation device; (6) emphasized rational approaches to situation-facing; (7) had difficulty with the notion of varying situational paths; (8) focused on the solutions their institutions are organized to deliver. In addition, the team found that the sub-samples veered to their own normative strengths (p. 51).

To resolve the discrepancy between the information practitioner and the client, comprehensive training of the information practitioner is required in order to make him aware of all aspects of the client-in-situation approach. He would have to develop a number of alternative strategies for communicating with the client and to assess the situation. In Phase III of the research training modules were developed which incorporated the findings and premises of the citizen study and the study of the information practitioner (Dervin, 1977b). These modules were designd to help the practitioner develop the communication skills that are necessary for using the client-in-situation approach.

Dervin's citizen study is relevant to our concern because it focuses

on the information needs of the individual in private life and provides a methodology that is applicable to other groups. Her typology of states an individual moves through when seeking information could be used to study the information seeking pattern of the Puerto Rican elderly. Her findings on the information practitioner's attitudes toward unique individuals in unique situations point up the need for a more personalized and empathic approach to information giving.

The study raises questions which are as important as its findings. Would Dervin's premise that there is no need to develop different strategies for dealing with the information needs of different populations hold when applied to an older population which in addition to the age characteristics also has a language barrier? Could the methodology be expanded to help us identify characteristic problems of older Puerto Ricans as reflected in their information needs and information seeking behavior?

4. Information for the Individual in the Work Environment

In the past, the study of the information needs of the individual in the work environment has primarily been oriented toward members of the scientific and technical fields. However, little has been done to explore the needs and behaviors of the human service deliverer and administrator. The assessment of the information needs of this group of people, in particular those who serve the elderly, was an integral part of the Gerontological Information Program (GRIP).

This prototype program was jointly established by the All-University Gerontology Center and the School of Information Studies at Syracuse University with a grant from the Administration on Aging. Its design placed the emphasis on information for the individual in the work environment, in particular the service providers and administrators working with the elderly in Onondaga

County. The purpose of the program was to create closer links between academic research in gerontology and the field of practice. A three-pronged approach was used integrating (1) research on information needs and uses; (2) the design, operation and testing of a prototype information system; and (3) an educational component.

The need assessment was directed at the potential users of the system in Syracuse and Onondaga County. A representative sample of agencies which provide service to older persons and older persons' organizations was drawn. The sample included four organizational types: (a) geriatric centers/ nursing homes, (b) senior citizens' groups and centers, (c) specific services (health, housing, transportation, etc.), and (d) umbrella or coodinating agencies. Sixty-five administrators and service providers were interviewed person-to-person by means of a structured questionnaire.

The analysis of the data concentrated on problems that the respondents needed information about (funding sources, transportation, the isolation of older persons); types and sources of information they used (directories, newsletters, personal contacts); and the kinds of information services they would prefer (Brindle, Dosa, Gee, 1977).

The respondents were asked about the topical areas that they have problems with or questions about. Respondents in each type of organization indicated problems with acquiring new information about transportation, isolation, recreation, and eligibility requirements as pertaining to the elderly. But when asked which problem was the most important to them, "funding sources" was mentioned with the most frequency. Personnel working in categorical services focused primarily on the topics that pertained to the client, while people in the other three organizational categories have problems or concerns that are both managerial and service oriented.

In order to understand how the respondents currently attempt to solve their problems, they were asked which information sources they use. Personal contacts were viewed by 56% of the respondents as the most helpful source. In addition to the general sources, they were requested to state specific sources. This resulted in a list of over 200 sources ranging from nursing journals to newsletters from elected representatives. Aside from local agency newsletters, very few of the sources were indicated more than once or twice. When asked about the types of information they use, they selected directory information (which often leads to human resource contacts) most frequently.

Based on the results of the need assessment and consultation with key members of the gerontological community, GRIP has developed two kinds of information delivery: a current awareness service in the form of a newsletter, and personalized information packages containing data and information sources and modes of obtaining them. In response to requests for specific information, searches were conducted. The nature of the information need was determined by analyzing the request through personal or telephone contact with the users. When necessary, information was extracted from the sources and organized for the user. The results of all searches were evaluated, edited, and packaged in the form, length, depth, and detail most appropriate for the requestor. Examples of topics are: legislation regarding architectural barriers, small-area demographic data on Spanish-speaking elderly, and communication support networks of the institutionalized aged.

The educational component of GRIP comsists of a graduate course which was designed to develop a theoretical basis for understanding of how older people of various backgrounds and in different settings use information and on the kinds of data service deliverers need. Topics cover problems of research utilization, public policy, laws and regulations, public choice

decisions, and consumer information. Students have direct contact with service deliverers in the community, and with the guidance of the GRIP staff, assist them with a variety of information related problems.

For the university, GRIP has developed an experimental directory of "Human Resources in Gerontology", profiling the individual expertise of researchers and educators. This represents an information sharing network. Each participant in the network expressed willingness to share information with the others. Many also agreed to serve as resource persons for gerontology related queries beyond the original network. This results in the direct sharing of specialized knowledge, skills, data and document files not currently available through information centers, libraries, and other formal systems.

The GRIP project provided us with both quantitative and qualitative evidence of the information needs and habits of service providers who work with the elderly. Three main strains wind themselves through the findings and may be synthesized in the following:

a) It seems that current methods of accessing formal sources of information are not successful for this population as indicated by the lack of solutions to problems or dissatisfaction with solution.

b) At this time, personal contacts are important sources of information for service deliverers and administrators.

c) There are numerous problem areas that those who provide services to the elderly need information about. The topical areas vary by the type of organization and the job responsibilities within the organizations. For purposes of information services development, this indicates that the current literature and data sources of many disciplines need to be searched for this population.

The findings generate researchable questions in relation to service delivery to Puerto Rican aged; these questions could be investigated by applying to them the GRIP methodology.

Description of the Proposed Model

The central concern of this paper is to identify research problems pertinent to the informational aspects of Puerto Rican aging. The literature review brought together four domains where insights and observations with possible implications for this concern have been accumulating. It seems that (a) the need for coping information cuts across all the everyday problems of older persons, and (b) the need for problem-solving information cuts across all sectorial concerns of service deliverers who work with other persons. Research has shown that the informal personal networks of people are important sources of communication and information. It has also built up evidence that scientists, professionals and service deliverers use various forms of informal information sharing.

Dervin found that, currently, information practitioners do not provide the kind of information service that takes the unique situations of a unique individual into account. The information need assessment study of the Gerontological Information Program (GRIP) found that service deliverers need all sorts of information and data for their work and that, currently, they do not often turn to information practitioners for assistance.

Taking into account the perceptions and empirical evidence that emerged from the literature review, the model we are proposing for use in future research is INFORMATION COUNSELING, a relatively new concept based on interdisciplinary antecedents. This approach has strong potential to assure a culturally relevant personalized information service to individuals by linking them with formal and informal sources of coping information, and

cost effective information support to service deliverers by linking them with existing information and data sources.

INFORMATION COUNSELING (IC) is defined as the interactive process by which an information practitioner (a) assesses information needs of an individual or organization; (b) determines the optimal ways to fill such needs and assists the client in information use; (c) assures systematic follow-up and feedback in order to evaluate the effectiveness of counseling (Dosa, 1977). Client assistance may by provided at four levels: (1) reference to an information source, (index citation, abstracts, bibliographies, etc.); (2) document delivery (text in print, audio-visual or machine readable form); (3) the information itself based on an analysis of the document (facts, data, summaries, information packages); (4) evaluated and interpreted information (advocacy, persuasion, etc.). INFORMATION COUNSELORS can optimize their effectiveness by accessing, on behalf of their client, not only formal information systems but also support networks and human resource networks.

In this process, the information counselor combines the techniques of interpersonal communication research and information utilization and transfer in order to better meet the information needs of individuals and organizations. The counseling process gains special significance in problem-oriented fields like Puerto Rican aging where cultural and psychological factors impact on information seeking and resources are widely scattered.

In a simplified scheme, information systems are said to have three components: (1) Information users or potential users, their environment, characteristics and needs (e.g. Puerto Rican worker who just lost a job because of age); (2) categories and nature of information resources and channels (e.g. social services, counselors, advocacy groups, directories,

employment listings, etc.); (3) an information transfer mechanism to link users and resource/channels (e.g. information and referral services, libraries, neighborhood centers, resource persons, etc.).

We argue that in order to do justice to the versatility of information processes that move in and out of the private and workbound life of an individual, an additional element should be introduced into this scheme. We call this element the "information problem context." We envision the "problem context" of an information query as a combination of (a) the information user's cultural and psychological environment (elderly Puerto Rican worker's economic and social conditions, family situation, despair, survival instinct, motivation to seek and use in order to alleviate his predicament, etc.), and (b) the use that will be made of the information (accessing the bureaucracy, turning to an advocacy group, etc.) (Dosa, 1974). The identification of information needs on the basis of the "problem context" by the information counselor avoids oversimplified approaches which do not take the psychological, behavioral and environmental factors of the situation into account. We believe that the benefit for the user is a more personalized and humane information service. Such an approach has a considerable potential to reach those who are currently not using information services.

We will give a brief overview of the elements of the informational counseling process and antecedents of its concept.

1. Elements of Information Counseling Process Represented in the Model

   - Assessment of potential information needs by research techniques.
   - Consideration of economic factors, cost of information, constraints, fee structures, institutional interests, etc.
   - Establishment of objectives, policies, and plans guiding the counseling process.

- Assessment of available formal and informal information resources.
- Construction of a directory file of resources and access to it.
- Development of client-practitioner relationships.
- Client interview and need assessment.
- Research on the background of the problem or need.
- Information giving (service), an assistance in utilization, or Referral to source where answer is most likely to be found.
- Follow-up.
- Collection of data and feedback information.
- Reassessment and evaluation research.

The client-counselor relationship might imply some of the following psychological, socio-economic, and legal concerns: the information seeker's right to the information: individual privacy and data security: validity of data sources recommended to the client: subjectivity of judgment and advocacy effectiveness; dynamics of the helping relationship; and measurement and costs of the counseling process. These are part of the knowledge domain and pertinent skills in which the information practitioner should have professional preparation.

2. Theoretical Antecedents of the Suggested Model

The model of information counseling emanates from concepts embedded in the literature of three areas. It is a composite and expansion of three previous models: (1) information and referral, (2) adult educational counseling, and (3) the library reference interview. Each of these previous models has been restricted to the applications in a particular professional context: social work, adult education and library service respectively. The new model significantly differs from its antecedents in that it incorporates inter-disciplinary features and, thus, is readily applicable to the counseling needs of various environments and problem areas.

A. Antecendent #1 -- Information and Referral (I & R)

The main functions of these services are: linking people in need of human services with the appropriate agency or program and collecting and analyzing data about human services and thus assisting in the community planning process by discovering duplications or gaps in programs. The function of referral might be part of each agency or it might be integrated in a community-wide system. Background data on I & R related legislation, definitions and alternative models of design are forthcoming in the Handbook of human services for older people (Holmes & Holmes, 1979).

The recent literature of information and referral is mainly program-oriented. Most programs developed without an attempt to keep more than basic statistics and to derive generalizations about the overall social need for information on human services. Policy orientation and data collection to support program planning has not been a characteristic feature of these services. In our review, the outlines of two broad categories of this model emerged: (1) the integrated I & R service usually developed by voluntary organizations or local governments, and to a lesser extent, (2) library-based I & R service, often housed in a public library and serviced by a team of librarieans and paraprofessionals.

A comprehensive study by Long, Information and referral research findings (1975, 1977), undertaken for the Administration on Aging, is a thorough examination of concepts and techniques, and it servies as a key reference work on the topic. A significantly new perspecived is offered by the monograph, Cultivating Client Information Systems by Bowers & Bowers (1977), which deals with information support for social service agencies and data sys tems incorporating client-related information. The impact of two-way cable television on delivering information about public services to the elderly was tested and found effective by a NSF-sponsored

project in Reading, Pennsylvania (Moss, 1978).

B. Antecendent #2 -- Adult Educational Counseling

The dividing line between the social caseworkers' counseling of clients on their human problems and educational counseling is not always clear, especially if these two kinds of advisement take place at the same location, e.g. a neighborhood information center or an educational opportunity center. Thomas, from the Ontario Institute for Studies in Education, wonders: "When does information giving or counseling with respect to a human problem take on an educational character? At what age does an individual need clearly declare itself as a need related to learning or education? We don't know" (Ironside and Jacobs, 1977). Educational counseling is defined by Ironside and Jacobs as the activity "referring would-be learners who know what they want to the places where they can get it: helping less confident individuals define their interests and needs; identifying sources of financial support; offering testing services; developing group counseling situations; and training counselors for individual institutions".

The research literature deals with counseling in the context of both formal educational programs and independent study. A survey by Carp, Peterson and Roelf (1973) of 3,900 adults showed that 77 percent of them were interested in gaining more skills or knowledge in a selected field. This suggests that educational counseling is a much needed social resource which should be acknowledged as such by policy makers. However, Ironside and Jacobs (1977), in their review of the international literature, found that "the lack of discussion of the counseling and information-giving function in many overviews raises the suspicion that insufficient attention has been paid to this activity because its importance has been (and still is) seriously underestimated" (p.vii).

Many authors see a diversification of roles in educational counseling and information services in the future. Feingold (1975) discusses such functions as helpers in decision making and specialists in knowledge processing. Another role is that of the facilitator in research utilization. Havelock and Havelock (1974) describe Project LINKER, a "local information network of knowledge for educational renewal". Brickley and Trohski (1974) report on the characteristics of "educational information centers" and suggest research methods for their evaluation. Educational brokering services are described by Heffernan, Macy, and Vickers (1976) as providing counseling, advocacy, assessment, and referral services. Still another approach to adult learning is the community learning center. Miller (1973) discussed the outreach efforts of these centers as they fuse educational and social outreach for the benefit of the currently underserved members of the community.

High priority is accorded to interpersonal communication between counselor and adult learner by Mavor, Toro, and DeProspo (1976). Their report on public libraries and adult independent learning offers systematic and well-documented information, as well as a training manual for need diagnosis.

C. Antecedent #3 -- The Library Reference Interview

The reference interview has a longer history and a more repetitive literature than either the social worker's referral service or the educator's counseling of the adult learner. Katz (1969) provides an overview of early "patron-librarian" relationship, reaching as far back as 1902. Taylor (1967) observed that "there are a few good by unsystematic papers on the reference function, but very little has been done of an analytic nature". His analysis of the process of negotiating a query resulted in the identification of five levels of information: subject identification: objective and motivation:

personal characteristics of the inquirer; relationship of inquiry to file organization; and anticipated or acceptable answers.

Recent themes in the literature may be recognized as (a) the diversification of reference service into non-conventional practices (Schrag and Boyer, 1975), (b) the need for a dynamic attitude toward client advocacy and the understanding that the library is a subsystem of a larger system of service delivery (Owens and Bravermen, 1974), and (c) the importance of interpersonal communication skills and the rapport they create with the library user (Gothberg, 1976). Norman (1978) reports on a literature analysis identifying several major topics related to the reference interview and highlights the interdisciplinary training needs for communication and counseling.

Research Needs

The model of "information counseling" and the proposal to develop a new professional role of the information counselor is seen as applicable to the following areas where Puerto Rican aging is concerned:

1) The elderly individual, families, advocates, support groups, services.

   a) Human service deliverers who handle individual cases,

   b) Area Agencies of Aging, community organizations and older persons' groups coordinating or designing programs and services for the elderly,

   c) Multidisciplinary gerontology centers where community relations components are in direct interaction with older individuals,

   d) Program development in public libraries, community colleges, community centers where outreach activities are stressed.

2) Planners, administrators, service providers, educators.

   a) Information and design support systems for staffs of human service agencies, organizations, and older persons' groups,

b) Gerontological libraries, educational resource centers, academic and research centers where gerontologists, researchers, students and other persons with a multipicity of backgrounds turn for sources of information and data.

In our foregoing discussion, we attempted to establish a conceptual background for the premise that information counseling as a viable component process should be taken into account whenever policies for gerontological service, research and education are considered. To establish this premise, we have to provide evidence to policy makers.

Research is needed to gain insights into the kinds of coping information that would assist the elderly individual in Puerto Rico and the elderly Puerto Rican on the mainland to better manage their lives. The information counselor has to be trained to understand the environment of the aging Puerto Rican in general as well as the particular situation of an individual. More knowledge should be built about information needs of the Puerto Rican family in relation to the aging person. Information counseling programs would have to be based on an understanding of the difference between the role of the Puerto Rican family in Puerto Rico and the family in American culture.

A major undertaking would be to identify the problems the aging individual in Puerto Rico encounters and to ascertain what information services they use, if any, to cope with housing, health, nutrition, transportation and other problems and how they use the information to deal with these problems.

A similar effort of identifying needs and modes of information use is necessary when dealing with the aging Puerto Rican individual on the mainland. Initially, a review of community groups and libraries should be conducted. The evaluation review would use such criteria as relevancy of information programs to elderly Puerto Ricans and accessibility and effectiveness of "coping information". A particular problem that will be encountered is the initial identification of the aging Puerto Rican in the

American community. This is difficult because of the ineffective delineation by the census. The next step would be to adapt the methodology used by Dervin to the Puerto Rican respondent, taking into account language barrier, locally determined variables, etc.

There is a need to train information counselors who would be able to interface with the three traditional information-oriented roles: information and referral services, adult education counseling and library reference service. The ideal people to train for information counseling to Puerto Rican elderly, in both Puerto Rico and the mainland, are Puerto Ricans because they can bridge the cultural and language barriers, and they can gain the trust of the elderly Puerto Rican more readily.

Data are needed on the effectiveness of current information roles in comparison with data generated by experimental information counseling projects. We assume that the educational programs of information couselors would:

(a) be communication-oriented and enable counselors to deal with the client-in-situation,

(b) provide a grounding in the problems and needs of the elderly in general and those particular to the elderly Puerto Rican,

(c) provide an understanding of the socio-economic, psychological, and cultural factors involved in working with Puerto Rican elderly,

(d) incorporate practical experiential situations,

(e) provide an understanding of the elements of information counseling and the psychological, legal and social implications of the process.

Another area that needs exploration focuses on the information needs of the individual in the work environment as it relates to the Puerto Rican elderly. Can a model such as The Gerontological Information Program (GRIP) be tested in Puerto Rico or in a Puerto Rican neighborhood on the mainland? What kinds of change would be necessary to adapt GRIP to a Puerto Rican

environment? Do the patterns of finding information by service providers and administrators differ in the Puerto Rican cultural context? Are the core of problems and information needs different? These are some of the questions that have to be explored before such a program could be utilized, although we assume that a GRIP-like model would provide a link between research in Puerto Rican aging and its practical application by service providers and administrators.

Policy Implications and Strategies

The model of information counseling has implications for policy development in the areas of service delivery, citizen participation, advocacy organizations, applied social science research, professional education and information and library services. Since public policy formulation in all these areas is incremental and fragmented, only a concise and clear strategy for the development of information counseling research and its applications to Puerto Rican aging has any hope of getting the attention of policy makers. The following section does not claim to lay out such strategy, only to initiate some ideas toward it. The actual strategies would best be developed by members of the Puerto Rican research, service and advocacy communities who are most familiar with the needs and relevant politics.

Recommendations

1. We suggest that as a priority, research effort be directed to investigate the potential impact of information counseling on both the Puerto Rican elderly person's coping ability and the capacity of service deliverers to plan, administer and give more individualized and cost effective service to the elderly.

   As government agencies, neighborhood centers and grass-roots organizations face increasing demands for information, finding the right source, at the right time and at an affordable price, is becoming as frustrating as the ordeal of accessing the health care delivery system. We envision the information counselor as the link between the people and the system.

2. Two sets of data need to be collected in two different environments using a combination of methodologies:

   A. To better understand the role of coping information in the elderly Puerto Ricans' life, data is needed on their motivation to ask for and use information: their capacity to process information in various forms (personal communication, groups, telephone, radio, television, large print, etc.,): their everyday problems (health, home, food, transportation, income, safety, language, isolation); their need for various coping skills: barriers to the utilization of coping information in different situations: responsiveness to individual and group information counseling: the effectiveness of the support network as a carrier of information; modes of input on part of the elderly into an information network (experience, family tradition, life historical insights, wisdom,

grapevine information); and the impact of counseling and network relationships on the betterment of life.

B. In the service agencies whose work directly affects older persons, data are needed about administrators, program developers, case workers and others. Categories would include: interest or lack of interest to base decisions on relevant and up-to-date information: barriers to locating and using information; preferences for data and their form (summaries, interpretation, critical evaluation); preferred information sources (funding sources, program descriptions, case histories, technical and professional updating information, guidelines, methodologies); reactions to various ways of cooperation (several agencies sharing an information counselor); concerns about the validity and accuracy of information, individual privacy and cost; effectiveness of informal networks and their role, if any, in sharing information: the impact of available information on the effectiveness of service delivery.

3. Based on exploratory research, curricula and training programs for information couselors need to be developed. Alternative approaches (formal courses in professional schools, independent study, continuing education, staff development workshops, training packages and interdisciplinary educational experiences) should be considered. Particular emphasis would be on the recruitment of Puerto Ricans and adults. A prototype program would be developed with

the cooperation of service providers, gerontological researchers and Puerto Rican community leaders.

4. The introduction of information counseling into the elderly Puerto Rican's life and the service delivery process is timely because of the following trends:

   A. There seems to be a growing awareness in the public sector that human services in Puerto Rico must be improved and expanded. For example, the Congress considered the provision of separate Title XX entitlements for Puerto Rico, Guam, the Northern Mariana Islands and the Virgin Islands (U.S. Congress. House. Committee of Ways and Means, 1978).

   B. In the United States, the number of Puerto Rican persons 65 years of age or older is relatively small (1.5 percent of the mainland Puerto Rican population) because of the tendency of older Puerto Ricans to return to the island. It is not likely that policymakers would favor proposals for the establishment of expensive new information services for this group. However, the diffusion of a process, information counseling, to existing services might receive attention and support.

   C. The Federal Council on the Aging has been conducting, since 1977, a Minority Aging Policy Study. Under contract with the Council, the Human Resources Corporation of San Francisco with a team of consultants, produced two background reports and four ethnic-specific papers. These studies represent a major advance toward identifying policy issues and research

needs concerning the minority elderly.

D. The National Commission of Libraries and Information Science, went on record with its concern for ethnic groups, the elderly, the disadvantaged and other populations with particulary hard-core information needs (National Commission on Libraries and Information Science, 1974 and 1975).

E. The National Clearinghouse on Aging established an information network through the Service Center for Aging Information (SCAN), with three major subject-oriented resource centers across the country. Information counseling services would benefit from the utilization of SCAN resources on behalf of elderly Puerto Ricans and those who work with them.

F. National voluntary organizations, minority advocacy groups, area agencies on aging and professional associations are becoming more and more aware of the strategic value of information and are likely to facilitate the diffusion and application of a new information delivery model.

In conclusion, we reiterate our premise that the culturally unique and socioeconomically precarious situation of the Puerto Rican elderly on the island as well as on the mainland calls for a highly personalized mode of information giving. Service providers who work with the Puerto Rican elderly need more effective information support. Information counseling, not predicated on the establishment of expensive new information services, has the potential to personalize the information giving process and thus assure a culturally and humanly relevant resource.

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HUMAN RESOURCE NETWORKS IN GERONTOLOGICAL INFORMATION

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The concepts and recommendations in this paper are presented in the spirit of the following saying that symbolizes the deepest respect for cultural heritage: "In Africa, when an old man dies, a library burns down."

Introduction

Gerontological information may be interpreted in two broad ways: (1) information processes and sources used by older persons and their informal social support groups and (2) information and data needed by those professionals, decision makers and researchers who are concerned with aging individuals and populations at the professional level. We may further divide information systems into (a) formal systems using various information facilities such as computer retrieval systems or libraries, and (b) informal information exchange networks linking people.

This paper will focus on concepts of information and data support to those who design environments for the elderly, influence legislation and regulations, conduct research or educational programs or are engaged in policy formulation or service delivery affecting older persons. There is increasing recognition in most countries that relevant and timely data and information provided to the practitioner, researcher, policy maker or planner will contribute to the quality of their work. Gerontologists have been voicing a growing need to communicate across national and cultural boundaries. Therefore, the conceptual framework of the research upon which this paper is based will be discussed in conjunction with the following questions:

* Can the findings of research projects and the models of prototype information systems be transferred from one country to another?

* What are the specific problems and constraints of such transfer, especially in the case of developing countries?

* What recommendations can be made to the international gerontological community in relation to the transferability of such research findings and system models?

Some Myths Need To Be Challenged

There are several myths threatening international cooperation in information transfer that need to be confronted.

First, some researchers and policy makers in the industrialized countries assume that research findings, policy guidelines and technologies transmitted to developing countries will, with a few alterations, normally be adaptable to the cultural environment and societal needs of the recipient country. Second, the literature shows little evidence of efforts to distinguish between different countries and their individual history, culture, social system and level of industrialization, as if "development" would be a great unifying and standardizing force catapulting all "developing" countries into a homogeneous mass. Finally, too much trust is placed in the effectiveness of formal information systems. Even if conceptually and technically adaptable to the needs of another culture, unassessed and inappropriately introduced information systems tend to increase, rather than alleviate, uncertainty and confusion. Institutional and bureaucratic complexity is one of the major barriers to sound communication flow in modern societies. As developing countries reach various levels of modernization and urbanization, their societies begin to show the strain of a growing organizational maze. Instead of steadily improving through technological and educational advances, individual access to information is becoming haphazard

and inequitable. While some people feel stymied by information overload, others have to make personal choices, establish priorities and manage professional programs in a veritable information vacuum. However, even if formal systems often flounder, the informal interpersonal networks of people working in a multidisciplinary field seem to transcend communication barriers because they are not predicated on intermediary mechanisms and can cut across institutional lines. Therefore, formal gerontological information systems should be supplemented by cross-national efforts that facilitate the direct linkages between gerontologists. In addition to the actual formal exchange of a few individuals, efforts should be aimed at developing a semi-informal information sharing network supporting the communication of as many gerontologists in as many countries as possible.

The Research Framework

The Gerontological Information Program (GRIP) has been funded by the U.S. Administration on Aging under a joint grant to the All-University Gerontology Center and the School of Information Studies at Syracuse University. The program uses an integrative approach to gerontological information including (a) problem-focused research on the information needs of gerontologists and service providers in the community, (b) development and testing of a prototype information dissemination system, and (c) an educational component.

In an information need assessment study, a representative sample of agencies and institutions was drawn from each of four organizational types: (a) geriatric centers and nursing homes, (b) senior citizens' groups and centers, (c) specific services (health, housing, transportation, etc.) and

(d) coordinating and planning agencies. Within each type of organization, questionnaires were administered to both administrators and service providers who had extensive direct contact with the elderly. Of the results of the preliminary analysis, the following are relevant to this paper: Personal contact was viewed by 56% of the respondents as the most helpful information source, and directories (which often lead to human resource contacts) were noted as the most frequently used type of source. Moreover, the study showed that the current methods of accessing formal information systems are not successful for this population; the respondents tended to rely on personal contacts for information because they could be easily accessed (Brindle, Dosa & Gee, 1977).

In the light of these findings, a corollary project of the Gerontological Information Program should be described: the construction and distribution of the experimental directory,"Human Resources in Gerontology". This represented a decentralized information sharing network linking gerontological researchers and educators at Syracuse University. An "interest profile" of each individual has been designed and updated annually to strengthen the linkage of ideas between gerontologists in different disciplines and professions. Each participant in the network expressed a willingness to share information with the others. Many agreed to serve as resource persons for gerontology-related queries beyond the original network, too. "Information sharing" in this context referred to the direct sharing of specialized knowledge, skills, data and documents not currently available through information centers, libraries and other formal systems.

Human Networks For Information Sharing

Traditionally, the informal exchange of information among experts was

perceived mainly in highly specialized fields such as sleep research (Crawford, 1971), or high energy physics (Zaltman, 1974). In recent years, however, the need to develop directories of experts and a formalized information referral mechanism in multidisciplinary fields such as gerontology, became urgent. The literature evidenced a multiplicity of interpretations of the network and referral concepts (Pritchard, 1978). A referral mechanism may be either centralized and operated by an information facility that provides information counseling, query switching and follow-up, or decentralized, in which case the responsibility of referring each other to potential information sources rests with the participants. The Gerontological Information Program (GRIP) experiments with both models by extending a centralized information and data dissemination service and, when needed, referral service to the community, and by distributing the "Human Resources in Gerontology" directory and thus decentralizing the referral function in the academic setting.

Although the research literature indicates a growing acceptance of the informational role of informal contacts among specialists, very little systematic work has been done on the benefits, problems and costs of semi-formalizing interpersonal information exchange through the development of decentralized referral mechanisms. Should the informality of interpersonal communications be left intact or would more structure improve the information flow? What measurements can we develop to assess effectiveness? What is the impact of personal values on the objectivity of information and data in a field where many theories and policies are controversial? Who is responsible for the validity of data in a referral situation? These are examples of questions which call for further testing and analysis.

III-7

The Transferability of Research and Prototype Systems to Developing Countries

Concerned with the need for gerontological information and data in countries that were at various levels of development, we began to study the problems of diffusing research results and transferring gerontological information systems to other societies. In this connection two conceptual areas were reviewed: research on aging in developing countries and the literature of information and knowledge transfer.

In the 1960's social gerontologists were greatly concerned with policies for cross-national and cross-cultural research on aging. The International Center of Social Gerontology took a leadership role in the widespread efforts to bring about unification and standardization of methodologies (Bergman, 1970). The United Nations Symposium on Research and Welfare Policies for the Elderly in 1969 in Israel, focused on the coordination of research at the international level. In 1974 the Conference on the Potential for Japanese-American Cross-national Research on Aging reviewed forty areas where research was needed (Lipman, 1975).

Much of the cross-cultural research of those years concerned itself with the social status of the aged in various societies. A critical overview of these research efforts was offered by Press and McKool Jr. (1972). However, the problems of the aging in developing societies as we know them today began to play a role in aging research only in the mid-1970's. Even then, the investigations were carried out by researchers from industrialized countries (Bengtson, Dowd, Smith & Inkeles, 1975). As a World Health Organization report stated: "The problems of the aged in the developing countries have not yet assumed the same importance as in the developed countries, nor have they attracted much attention....The situation is, however, changing rapidly

as a result of urbanization, industrialization, and a shift from a subsistence to a market economy (World Health Organization, 1974). As gerontologists in a developing country begin to study the age-related problems that are peculiar to their society, they are likely to find also concerns that are common to most economically underdeveloped areas. Thus a new need for cooperation and data sharing is emerging. Research conducted by developing country gerontologists will be of great significance to the entire international gerontological community.

The literature of knowledge transfer and technology transfer is extensive. Over the last two decades numerous national governments, inter-governmental or ganizations and scientific societies have sponsored collaborative work by groups of experts. A series of intergovernmental conferences on food, population, energy and economic or environmental problems helped to create an international context for information about such societal issues. Alas, some technical experts who serve as consultants in developing countries consider the transfer of knowledge a one-way channel and fail to submerge themselves deeply enough into the culture of the "recipient" country. Consequently, they are not likely to perceive the messages, most often non-verbal, which are communicated to them from the depths of these cultures (Maruyama, 1974). They seldom know how to learn from their colleagues and counterparts in the developing society, and thus end up being culturally deaf and blind brokers of sterile knowledge.

Very different is the insight of participants in the recent International Meeting on Aging who agreed that "a major goal should be the creation of a partnership among countries of the world in aging. One of the objectives of such a partnership would be the sharing between those

who have knowledge and experience and those who have not. The group cautioned, however, that there is danger of imposing the knowledge and approaches of the developed countries on the developing countries which are too often imitated rather than evaluated against the social and cultural context of the developing country." (Beattie, 1978).

In gerontology, efforts for the cross-cultural sharing of data, information, knowledge and technology are equally important. Most of the emphasis in the cooperation between industrialized and developing countries has been based on technological innovation (Helleiner, 1975). The diffusion of appropriate medical technologies is deemed especially significant because of the hardships resulting from poor housing, nutrition and health care that a large segment of the older population has to endure in the economically deprived areas (The World Bank, 1975). Thus, information about available technology, applicability, assessment and social impact is a vital part of gerontological information for developing countries.

In recent years, societal problem solving, innovation and related public policies are rapidly gaining importance in the poverty-stricken areas of the world. Information about hospital equipment and information about retirement programs form equal components of the information base that developing countries need. Therefore, this discussion will focus on both the transfer of technological information and social policy information.

Two modes of closing the gap between an invention (new knowledge) and technological or societal innovation (the application of new knowledge) may be distinguished. What we may call "vertical transfer" refers to innovation based on research and development work that had been carried out in the same country. "Vertical" symbolizes either the transfer of research findings into

practical applications or the transfer of experience and knowledge from practitioner to practitioner. Although most of the current research and technological innovations is conducted in the industrialized areas, developing countries are beginning to strengthen their capabilities to fund indigenous research. "Horizontal transfer" refers to the importing of technology and social programs from the country of origin and applying it in the recipient country. The relationship between technology transfer, information transfer and knowledge transfer might be shown by the example of a developing country that is importing kidney dialysis equipment. The technology alone would be of no real use to anybody. The information that may or may not accompany it might include guidelines for adaptation, use, maintenance, repair, impact, side-effects, cost, specifications, patents, and so on. Knowledge transfer would indicate that medical and engineering consultants are available for the training of personnel in the recipient country.

Factors That Influence Transfer

The transfer of either gerontological research findings or information about innovative technologies, policies and programs is an extremely complex social process. Some of the factors that influence the dissemination of research findings to developing countries include:

* cultural heritage and historical memory
* societal values and beliefs
* political ideology and dynamics
* the economic and social system
* the educational system and its relation to the central government

* available resources for research and development
* legal constraints
* level of professionalization
* level of bureaucratization
* appropriate information dissemination systems
* capability to utilize information and knowledge

Some of the factors that influence the effective transfer of technologies and programs, including prototype information systems are:

* level of industrialization and mechanization
* the communication intrastructures
* public transportation system
* legal and patent restrictions
* adequate knowledge of how to use the technology
* maintenance capability
* economic conditions which require labor-intensive rather than machine-intensive information systems
* available trained manpower to use the system or technology
* the ability to train others in its use
* the ability to assess and to anticipate its impact on the society

Recommendations to the International Gerontological Community

In view of the work of the United Nations Information Exchange System on Aging and other international programs, this paper focused on a particular aspect of gerontological information transfer that has potentially high value for developing countries.

1. Since past and current investigations indicate that the interpersonal information exchange networks of specialists are more responsive to information needs than traditional formal information systems, it is suggested that a program be initiated to further explore this mode of information support to gerontologists.
2. It is envisioned that the recommended program would
   a) conduct a pilot study of the implications, effectiveness and cost of establishing a network of gerontologists in developing countries and facilitating information sharing among them as well as with their colleagues in industrialized countries,
   b) develop and distribute a directory of "expertise profiles" of gerontologists in developing areas of the world, together with an indication of where gerontological data and document files are located and what the conditions of access are,
   c) design alternative methods for the maintenance, update and evaluation of such a directory by both labor-intensive and computerized methods,
   d) develop both quantitative and qualitative evaluation techniques to test the effect of such direct information sharing on the aging-related activities of participating gerontologists,
   e) generate workshops and meetings in developing countries, conducted by experts from those countries, dealing with specific problems of gerontological data and information resources,

f) train a small core of gerontological information counselors, recruited from developing countries, who would identify the information and data needs and build the basic resources in their countries.

Such a program would strengthen the capability of developing countries to establish research policies and generate age-related studies in the context of their own culture. Cooperation in gerontology between the industrialized and developing areas of the world would thus become a two-way road.

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